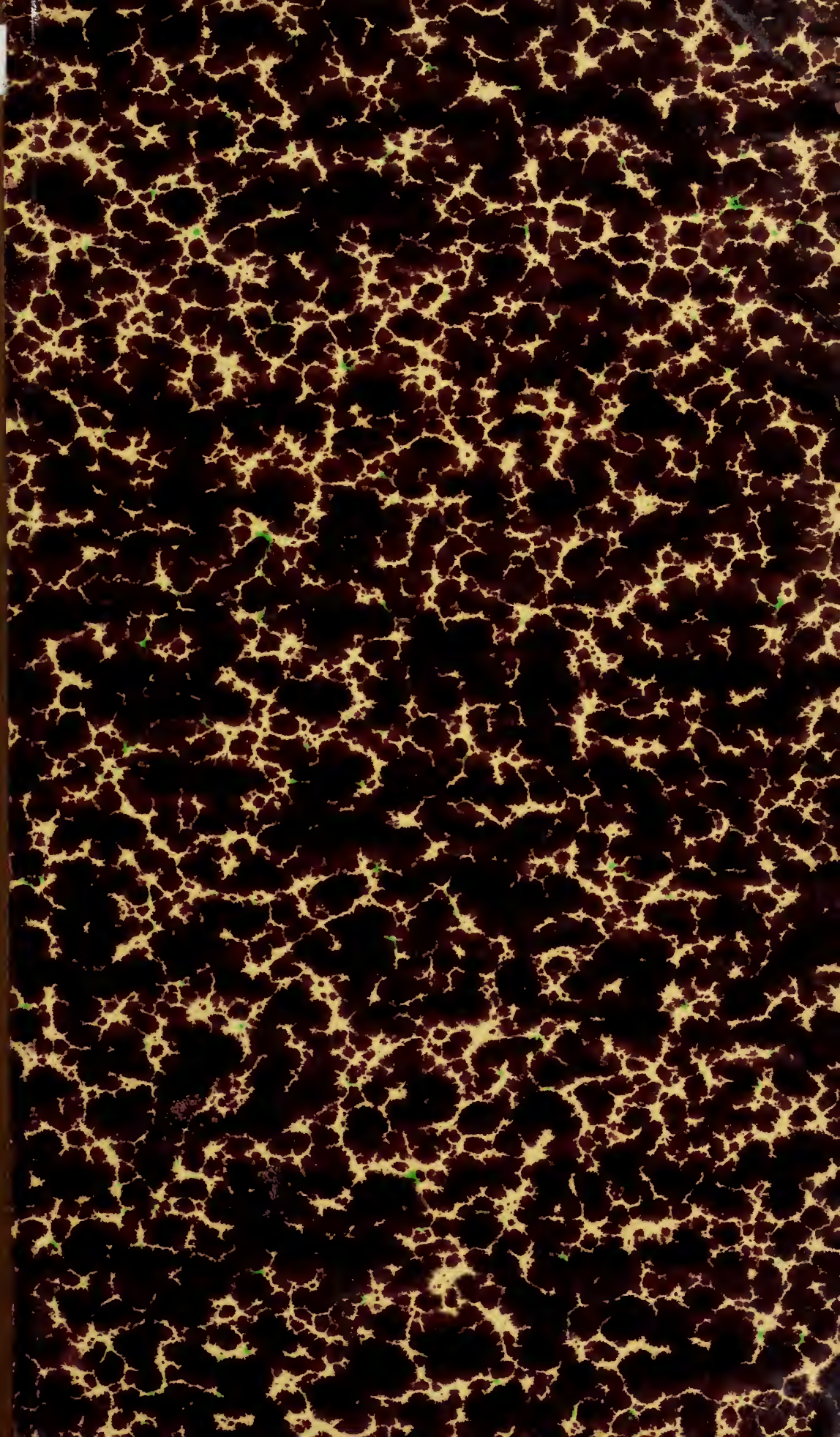


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THE JOURNAL

of

THE MEDICAL ASSOCIATION OF THE STATE OF ALABAMA

\$3.00 per Annum, 25c per Copy
Vol. 2, No. 1-12

July 1932

Published Monthly in Montgomery
at 519 Dexter Avenue

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Entered as second-class matter July 9, 1931 at the post-office at Montgomery, Alabama, under the Act of March 3, 1879

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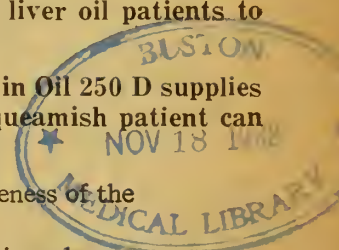
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THE JOURNAL

OF

The Medical Association of The State of Alabama

Published Under the Auspices of the Board of Censors

Vol. 2, No. 1

Montgomery, Ala.

July 1932

OBSTETRIC ANALGESIA*

SIDNEY MEEKER, M. D.
Memphis, Tenn.

Relief of pain in labor dates back to antiquity, when potions were given to women in labor and weird incantations were performed. Even the god Apollo was said to have been born while his mother, Latona, was under hypnotic influence. Among savages alcoholic beverages were given. Opium was used by the Egyptians and coal vapor was administered to women of India. In the middle ages fumes from a combination of opium, hemlock, hyoscyamus, mandragora, ivy, lettuce, hemp and dock seed were used. Fumes from vinegar were inhaled to awaken the patient. Probably the earliest record of a rectal injection for the relief of pain in any condition was when Dioscorides, a surgeon-botanist, used wine of mandragora in relieving wounded soldiers of Nero's armies. In 1846 Roux injected pure aqueous ether in the rectum, but it was found to be too irritating.

Nitrous oxide was discovered in 1774. In 1799 Sir Humphry Davy discovered its anesthetic properties. In 1800 Dewey used it to relieve headaches. December 11, 1844 Horace Wells, a dentist, used it in extracting a tooth. In 1868 nitrous oxide and oxygen were first used in surgery by Dr. E. Andrews of Chicago and about 1880 it began to be used in obstetrics.

Ether inhalation was first used by Dr. C. W. Long of Georgia in removing a tumor of the neck, March 30, 1842. In January 1847, Sir James Y. Simpson, of the University of Edinburgh, Scotland, was the first to use ether as an anesthetic in obstetrics. On

November 4th of the same year he first used chloroform in a delivery. In 1853 he used it in the delivery of Queen Victoria of England. He substituted chloroform for ether because the unpleasant odor of ether on his clothes was objectionable to his patients. In speaking in defense of painless labor he said: "Pain in excess is destructive and even ultimately fatal, and the great pain accompanying parturition is no exception to this general pathologic law. If this is true, and I believe it is, is it not demanded that we employ all means at our command for the alleviation of pain incident to childbirth?"

In 1899 Schneiderlin recommended morphine-scopolamine in surgery and in 1902 was the first to use it in obstetrics. The next year it was further developed by Von Steinbuchel. Subsequently it was used by Kronig and Pankow with varying success. Heroin and pantopon were tried in the place of morphine without any special advantage.

Under the name of twilight sleep (Dammerschlaf), Dr. Karl Gauss, of Freiburg, Germany was the first to use morphine-scopolamine to any extent. It was the greatest step in the direction of painless childbirth up to that time. However, its original aim was to produce amnesia and not analgesia. The dosage was determined by the ability of the patient to remember ordinary familiar objects that were shown her at stated intervals. The patient was kept in a sound-proof, darkened room and her ears were plugged with cotton. He used morphine-scopolamine in the initial dose at first but later substituted narcopine for the morphine. An average of three doses of scopolamine was used during the remainder of the labor. He reported one

*Read before the Association in annual session, Mobile, April 20, 1932.

thousand (1,000) cases with seventy (70) per cent perfect results. Uterine inertia was present in twenty (20) per cent with prolonged labor, calling for the use of forceps. Thirteen and seven-tenths (13.7) per cent had blue asphyxia or oligopnoea. By blue asphyxia he meant a condition in which the child, after one or two inspirations or even a cry, appeared to be in a state of deep sleep and forgot to breathe, the heart continuing to beat unaltered. They were usually easily revived by artificial methods. His death rate he gave as three (3) per cent. He considered his failures as due to

1. Beginning the injection too early.
2. Beginning too late to take effect before delivery.
3. Giving too large a dose or repeating it too often.

In 1913 a paper was read in Chicago giving a report of three thousand (3,000) cases delivered by the Kronig-Gauss method of twilight sleep.

In 1922, Dr. B. J. Kouwer, Professor of Obstetrics in Utrecht University, Holland, in condemning the use of twilight sleep expressed the opinion that, when a woman has so far degenerated that she can no longer endure the pains incident to childbirth, she is no longer fit for motherhood.

In Europe special hospitals were built in which to give twilight sleep. There was a great deal of secrecy in its use and such extravagant claims made for it that the medical profession as a whole condemned it. Medical men are very apt to believe and use only what they are taught in the school of medicine which they attend. Up to this time very little was taught about hyoscine or scopolamine. Those who condemned it overlooked its many good points until several recognized physicians began to report excellent results in its use as an analgesic in a large series of cases.

Opitz, in 1921, reported 2,037 twilight sleep cases with a death rate of two and one-tenth (2.1) per cent and in 2,242 cases without "twilight" the death rate was three and seventy-five hundredths (3.75) per cent. In the November 1921 *Lancet*, Horwitz states, twilight sleep is especially good in minor pelvic contractions and breech cases, also in mothers with heart disease. He

says "the more I administer twilight sleep the more I like it and I consider it to be the greatest advance in obstetrics since the employment of chloroform."

In the December 1921 *Lancet* is reported a lecture given by Dr. Hugh S. Davidson to the Edinburgh Branch of the Scottish Midwives Association. In it he says: "So many doctors are wholly in favor of the use of twilight sleep in every case and others are equally emphatic in condemning its use in any case. Some of the laity, especially those who have experienced it personally, swear by it, whilst others inveigh against it and credulously swallow every tale they have heard as to its alleged effects on the mother and the child and to its filling the asylums with idiots. I have never come across even one such case. My personal opinion is completely in its favor as you can judge by the fact that I have used it among my nearest relatives".

In 1925 Dr. G. W. Theobald, of the University of Leeds, Dublin, Ireland, reported the use of twilight sleep on a series of primipara in the Leeds Maternity Hospital. The average length of labor was ten (10) hours and forty (40) minutes, while the average time without "twilight" was eighteen (18) hours. The convalescence was nearly proportionately shortened. The results were excellent and the bogey of blue babies was conspicuous by its absence.

In the March 1923 issue of the *New Orleans Medical and Surgical Journal*, Dr. Bertha Van Hoosen, Professor of Obstetrics in the Loyola University Medical School, reports a series of 2,023 cases of twilight sleep, covering a period of eight (8) years, that were delivered in the Francis Willard, the Mary Thompson and Mercy Hospitals of Chicago. After the initial dose of morphine-scopolamine, the patient was given scopolamine gr. 1/100 every thirty minutes for three doses and then every two hours until delivered. There were only fifty-three (53) cases of asphyxia or blue babies, all being resuscitated. Twenty (20) of these patients had fifteen (15) doses each of scopolamine without a single case of asphyxia.

My first case of labor, after I located in Memphis in 1908 was a primipara with a so-called rigid os. After ten (10) hours of hard labor, with pains every two or three minutes, the dilatation was less than three

fingers with practically no thinning of the cervix. As she was about worn out by this time I decided to give her a hypodermic of H. M. C. No. 2. It contains morphine gr. 1/8 and hyoscine (scopolamine) gr. 1/200. When it took effect the pains became ten (10) to fifteen (15) minutes apart and she slept soundly between the pains. In an hour and a half the pains were again about three minutes apart. On making an examination I was surprised to find the cervix fully dilated and the head in the mid-strait. The baby was soon delivered. In cases where the pains were very severe in the latter part of the first stage, I continued to use H. M. C. to give rest and take the sharp edge off pains. Having had this experience with H. M. C., I was prepared to try out scopolamine as used in Gauss twilight sleep.

I recall a lengthy discourse on hyoscine by Dr. H. A. Moody, my Professor of Therapeutics in the Mobile Medical College. He told us of its use by the late Dr. Geo. E. Petty, of Memphis, Tenn., a pioneer in the use of hyoscine in the cure of the morphine habit. I had the pleasure of meeting Dr. Petty soon after I located in Memphis.

In 1914 I discussed with him the advisability of using scopolamine in twilight sleep. He said that scopolamine, which is identical chemically, with hyoscine has no cumulative properties, is eliminated in a few hours and has no after effect. It may cause true delirium in those who have an idiosyncrasy to the drug. By true delirium he meant a case that has to be forcibly controlled. In August 1914 I persuaded two patients to let me give them twilight sleep. The next year five others "risked" taking it. The general effect of scopolamine on the mother, is flushing of the face, accelerated pulse, restlessness, sometimes delirium and occasionally headache, nausea and vomiting. However, vomiting often occurs without analgesia of any kind as digestion seems to stop or is greatly inhibited during labor. At first many were afraid to try it as their friends had heard it was extremely dangerous; that the mother was liable to die while under its influence and the baby might be an idiot. In a few years I began to deliver many of these friends under twilight. They saw the mothers did not die, the children were not idiots and also that the mothers were relieved of the major part of their suf-

fering. Because of my using analgesia I have an average of forty (40) to fifty (50) new patients a year. In the beginning I used the memory test as to dosage and interval between doses, but soon decided it was not practical. I now depend on the following condition to determine the size of the dose, namely:

1. The severity of the pain,
2. The depth of sleep between pains,
3. The thinning or effacement of the cervix,
4. The rapidity of the dilatation,
5. The rate of descent of the head or presenting part.

At first my dose of scopolamine was gr. 1/100 to gr. 1/200, but now I give gr. 1/200 to gr. 1/400. The amnesia and analgesia of the smaller dose repeated to effect is usually more satisfactory. When labor begins with extremely severe pains or when I use a bag I often increase the morphine to gr. 1/6 and the scopolamine to gr. 1/150. Morphine-scopolamine usually lengthens the interval between pains when it takes effect, but this does no harm as it gives rest and the patient is more able to withstand the harder pains which follow. Sometimes false labor begins with strong pains but they usually stop within an hour or two. By giving morphine-scopolamine the pains will stop almost immediately. For ideal results the patient should have isolation and quietude, but this can seldom be obtained. As the eye is the last of the special senses to lose its power of impressing the subconscious mind, I have them keep their eyes closed.

Before the patient is under the influence of the morphine-scopolamine I have her take a deep breath, at the beginning of a pain, and hold it as long as possible, then take another breath and hold it until the pain is gone. By constant repetition this registers on the subconscious mind and they will continue to take a deep breath and hold it in this manner throughout labor. I do not allow them to pull on straps.

The great majority of patients under scopolamine can be controlled by sharp commands provided they have not been given too large doses. Superstitious women and those of a low level of intelligence are more apt to have delirium than are those of the intelligent group.

In giving morphine-scopolamine analgesia it is necessary for the doctor, a nurse or a competent member of the family to stay with the patient after she is completely under the analgesia. When nitrous oxide or ethylene and oxygen gas analgesia is given it is necessary for the doctor and the anesthetist to remain with the patient. This is expensive as gas costs the patient from \$12 to \$15 an hour while scopolamine costs less than one cent an hour.

Morphine-scopolamine seems to have a relaxing effect on the circular muscle fibers of the cervix while it interferes very little with the expelling forces of the upper segment of the uterus. It greatly relieves fatigue and the patient awakens in a much better condition than where no analgesia has been given. Practically all my cases of blue babies have the cord about the neck or some other kind of distocia to account for the condition, such as prolonged labor, occiput posterior presentation, et cetera.

In 1922 after eight (8) years experience in the use of twilight sleep, I wrote a paper on the subject and in closing I said, "My belief is, that twilight sleep or some modification, under another name, will be used because the mothers are getting wise. They are learning that their friends are getting relief and they will demand it also".

The next year a report of a newer method of analgesia was published in the American Journal of Obstetrics and Gynecology by Dr. Gwathmey, who gave it the name of synergistic analgesia. The method was developed in the New York Lying-In Hospital. A second report was published in 1924.

In August of that year I began to use it. My patients complained so much of the pain and soreness following the injection of the magnesium sulphate that I soon discontinued it and gave the ether-oil in conjunction with the morphine-scopolamine analgesia with which I was familiar.

If a patient has taken ether with disagreeable memories she will probably complain during the administration of the ether-oil. However, when it becomes effective she will sleep quite soundly between pains. An enema should be given before injecting the ether-oil. During the injection I have the patient lie on her *right* side instead of the *left* as usually advised. When

lying on the left side the descending colon is compressed and the solution is more apt to be expelled. The solution is injected through a No. 17 stiff catheter attached to a large size asepto syringe. If the solution enters freely the syringe acts as a funnel. If it does not, it can be forced in by inserting the bulb plunger. Ether-oil has antiseptic properties and any bowel movement during delivery is not apt to cause infection.

I seldom use ether-oil before the latter part of the first stage or the beginning of the second stage. At this time it seems to produce a better relaxation of the cervix and interferes very little with the expelling forces. To a great extent it takes the place of intermittent nitrous oxide or ethylene oxygen gas during the last hour or two of labor.

Sacral and spinal anesthesia in obstetrics are still in the experimental stage and should only be used by those who are experts.

The barbitol compounds, such as sodium amytal, nembutal, pernocton and avertin are now, as we know, being used with much success. In medicinal dosage, experimentation seems to reveal that they are practically harmless to mother or child. They can be given by mouth, per rectum or intravenously. In conjunction with other analgesics they come near producing ideal amnesia. I have been using sodium amytal and nembutal singly or combined with very gratifying results. The action of sodium amytal is strongly hypnotic but only mildly analgesic. That of nembutal is rather strongly analgesic but has a comparatively short hypnotic effect. Paying attention to trivial details often accounts for best results. In a few cases analgesia seems to increase the necessity for operative delivery. This usually is not a serious matter as the lower uterine segment and the outlet are more relaxed under analgesia. Often an anesthetic is not necessary for the delivery. Under analgesia and especially where ether-oil has been given the perineum can be "ironed out" and thus prevent a large number of lacerations. It is rare that normal positions require more than a shallow episiotomy or prophylactic forceps, by which I mean small low forceps that are released as soon as the head is on the perineum. Manual or forcep rotation of a transverse head or occi-

put posterior position, extraction of a breech, mid-forceps and podalic versions require a deep surgical anesthetic. I have never used high forceps because of the extreme danger to both mother and baby in their application. I have had a few cases that were so thoroughly relaxed under analgesia that I was able to apply mid-forceps or do a version without an anesthetic. In cases of prolapsed hand, arm or cord, in face, chin and transverse body presentations and in transverse head or occiput positions that do not rotate or show a tendency to rotate after one or two hours in the second stage, I do a podalic version. I do not know what per cent of my occiput posterior cases might become persistent for I terminate them by podalic version before this occurs.

Some advise that chloroform should not be used as an anesthetic in operative deliveries where ether-oil has been given. I have seen no bad effects from its use and I prefer it as it gives better relaxation than gas or ether. However, it should be given by one who is accustomed to its use.

Dry labor and malpositions such as occiput posterior, breech, face and transverse body are poor dilators and the first stage is prolonged. A Braun bag used in such cases will shorten the first stage by nearly one-half.

MY AVERAGE LENGTH OF LABOR

In all cases	—Primipara—	—Multipara—
Without analgesia	13 hours 45 min.	9 hours 57 min.
With analgesia	12 hours 11 min.	9 hours 2 min.
Breech cases		
Without analgesia	33 hours 17 min.	15 hours 53 min.
With analgesia	10 hours 28 min.	11 hours 9 min.
Transverse body		
With analgesia	13 hours 10 min.	11 hours 40 min.
Bag induction		7 hours 47 min.
Occiput posterior		
Without analgesia	20 hours 43 min.	12 hours 24 min.
With analgesia	11 hours 59 min.	9 hours 29 min.
Bag induction	7 hours 17 min.	4 hours 26 min.

There are a few disadvantages in the use of enteral and parenteral analgesia:

1. The patient under profound analgesia is not open to suggestion.
2. It takes nearly an hour to become effective.
3. It cannot be controlled after once given as can inhalation analgesia.

There are many advantages in the use of analgesia:

1. Simplicity of treatment.
2. The cost is very little.
3. It can be used in the home as well as in the hospital.

4. Loss of memory.

5. No apparent ill effect on mother or baby.

6. It shortens labor as a whole.

7. The mother is not exhausted.

8. A short third stage with small loss of postpartum blood.

9. Patients under analgesia require less anesthetic for operative delivery.

10. The application of forceps and repairs can often be done without an anesthetic.

11. It relaxes sphincters while it interferes only slightly with uterine contractions.

12. The patient awakens with a sense of well being, freedom from pain and very little fatigue.

13. It does away with most of the fear of parturition.

14. It helps prevent shock and relieves strain on the heart.

15. Scopolamine can be continued for hours without danger.

I am convinced from my experience with obstetric analgesia that the advantages far exceed the disadvantages.

DISCUSSION

Dr. W. H. Blake, Jr. (Sheffield): I would like to ask if there is any great difference between using morphine and scopolamine and ordinary H. M. C.?

Dr. F. A. Lupton (Birmingham): I have been impressed with the difference in the way obstetricians relieve pain. I do not think I have ever seen any two men who did it exactly the same way. Each of us pursues a slightly different course and think our way the best.

On the Hillman Hospital service in Birmingham, we have a wonderful opportunity to try various agents but I have concluded that morphine and scopolamine followed by ether are best. Further, I believe that for deep anesthesia, as needed for versions, nothing is superior to chloroform.

Dr. Meeker (closing): First, let me answer Dr. Blake's question. Apparently there should be no difference between H. M. C. and morphine and scopolamine. However, I believe I get better results from H. M. C. tablets. Why, I do not know but they seem to give more relief from pain and the analgesia is better.

Now, I vary the method of analgesia according to the patient, and I do not use any one thing exclusively. Sometimes I will use sodium amytal and for the next patient not use it at all. For still another I use nembutol (now called pentobarbital). It depends on the rapidity of the labor as to how much of each I will use.

I thoroughly agree with Dr. Lupton that chloroform is the best anesthetic in obstetrics.

OBSERVATIONS IN SPINAL
ANESTHESIA*JESSE H. YORK, M. D.
Atlanta, Ga.

Each generation has its investigative fashions which run more or less in grooves of least resistance or greater promise. The use of spinal anesthesia has had its undulating existence and has been known, used and often abused by the medical profession since 1889. There have been reasons for its resurrection and discard in each instance, the chief ones being the lack of suitable and standardized solutions and technic with resulting mortality and morbidity. It was Polak who said, "I have had three attacks of spinal anesthesia". The present wave of popularity based upon experiences good and bad in the past, and improvements in technic and perfection of agents in the present has given it a wider scope of usefulness and safety than has any previous usage. At the present time rachianesthesia is graduating from the role of a fashion or fad and if definite indications and contraindications are observed along with standardized and intelligent technic it will assume a valuable place in the world of anesthesia.

The literature of the past three years has been rich in recommendation of certain solutions, various technics and advice in management of spinal anesthesia cases. The purpose of this article is not primarily to summarize the literature but rather to call attention to many of the untoward and disturbing symptoms arising in the administration of spinal anesthesia, to attempt to explain their physiologic and pathologic cause and to recommend a technic of administration and management for correction of same. It is further offered as a possible aid to the general practitioner and non-surgical profession in deciding for or against spinal anesthesia for their referred patients; also with the hope that details of technic and management worked out in this series may be of interest to other users. These conclusions were reached after three and one-half years' observation of the literature, visits to many of the larger clinics, and personal administration of more than 300 anesthetics.

*Read before the Association in annual session, Mobile, April 20, 1932.

Historically speaking it is interesting to note that like ether, procaine derivatives were first used to produce anesthesia purely by accident. J. Leonard Corning of New York City, supposedly in the seventies, first produced anesthesia by the intradural method while giving an attempted therapeutic extraspinal injection of cocaine, and it was not until fourteen years later that August Bier of Germany introduced spinal anesthesia as a definite procedure. The profession is deeply indebted to such men as Babcock, Labat, Pitkin, Lundy, Lahey and others for the wealth of information upon spinal anesthesia in past and current literature. In 1926 Babcock had been a strong advocate of spinal anesthesia for 20 years and his experience then included over 20,000 inductions. However, words of warning were given by him at that time as follows: "It is most distressing to have a death even from a perfectly natural cause under an unconventional anesthetic; and with spinal anesthesia the limits of safety are sharply drawn and in most cases may be predetermined. Consider very carefully before you undertake the use of spinal anesthesia. Do you live in a small or critical community where every symptom that may later develop will be linked with the unusual anesthetic? As the years pass by the infirmities and diseases of age will come to your patient, and as his prostate enlarges and his legs grow feeble and his eyesight less acute, he may reproach you. For someone will suggest that his symptoms are inevitable because, years before, you gave him a spinal anesthetic".

PHYSIOLOGY

Before going further into discussion it is important to get clearly in mind the physiology of regional anesthesia induced by intraspinal nerve block. It consists of a temporary and complete root interruption. The posterior (sensory) roots are blocked with consequent analgesia and loss of tactile, muscle and temperature sense. The anterior (motor) roots with the associated white communicating rami are also blocked causing temporary motor paralysis and especially important vasomotor paralysis. The posterior root block is important that the operation be painless; the anterior root desirable that the operation be done easily in the presence of complete muscle relaxa-

tion. The interruption of the white rami, while it favors intestinal peristalsis, and reduces bleeding, also leads to slowing and weakening of the heart action, and a fall in blood pressure may be hazardous. This latter action is controlled by preanesthetic administration of ephedrin and also by regulation of the height of white rami interruption by position of the table and speed of giving the intraspinal preparation. If a diffusible solution is used, such as novocaine or neocaine crystals dissolved in the fluid and reinjected, the solution is controllable up to about 10 minutes after it is given, after that time it becomes fixed to the nerve roots and no change in extent of anesthesia may be expected. Spinocaine differs from the other preparations mentioned in that its viscous character prevents diffusion in the spinal fluid in which it floats.

INDICATIONS

Intelligent care in choosing only suitable cases for spinal anesthesia, aside from avoiding blunders and breaks in technic of administration and management, will undoubtedly give spinal anesthesia a definite and permanent place in good usage and prevent the decline which in the past has followed every wave of prominence.

The recognized indications are in general practically any cases requiring surgery below the diaphragm, provided there are no existing contraindications. It is especially advisable in the presence of diabetes, nephritis, liver dysfunction, respiratory disease, etc. It is also useful where a definite diagnosis of paralytic ileus is made and other relief measures have failed.

CONTRAINDICATIONS

The usually recognized contraindications are:

1. Hypotension cases (where systolic blood pressure is below 100);
2. Cases of shock;
3. Severe hemorrhage cases (before blood volume has been replaced);
4. Severe cardiac or vascular disease;
5. Cases where there is a known idiosyncrasy to procaine derivatives.

Others often mentioned in the literature are cases of intestinal perforation and those of general peritonitis. The argument against its use in such cases is that the hyperperistalsis induced causes an expulsion of intestinal contents into the peritoneal cavity and also the necessary Tren-

delenburg allows gravitation upward of infected material in intestinal perforation cases; and that hyperperistalsis breaks down that which nature has walled off in peritonitis cases. An equally good argument, however, is that the harmful effects of an additional amount of intestinal contents in the peritoneal cavity and the gravitation upward are trivial and insignificant when compared with the advantages of the patient's freedom from shock, and the decreased trauma to viscera in the presence of a relaxed abdomen. Also the amount of spilling is probably less in a relaxed abdomen than that induced by handling intestine in the presence of a rigid or semi-rigid abdomen. And it is often true in the presence of intestinal perforation and spilling that the amount of general anesthetic necessary to give relaxation is too great for the patient's general condition, particularly if necessary over any length of time.

PREPARATIONS USED

The common preparations in general use today are (1) spinocaine (Metz), (2) nupercaine (Ciba), (3) novocaine, (4) neocaine, (5) procaine, and (6) stovaine. Preparations heavier than spinal fluid usually contain some form of sugar, and those of lighter specific gravity contain alcohol. Those of approximately the same specific gravity as spinal fluid are obtained by dissolving the crystals of neocaine or novocaine in spinal fluid withdrawn at the time of puncture.

Spinocaine (Metz), Pitkin's preparation, is the one used in the vast majority of cases in this series. Two solutions are employed: (1) ephedrin-novocaine solution for vasomotor control and local anesthesia in doing spinal puncture, and (2) the spinocaine proper for intraspinal injection.

Formulas: Ephedrin-novocaine solution: 1 cc. ampule contains ephedrin 50 mgs. in 1 per cent novocaine solution.

Spinocaine solution: 3 cc. ampule contains novocaine 300 mgs., strychnine sulphate 2.2 mgs., in starch solution.

In general 3 cc. of spinocaine and 2 cc. of ephedrin-novocaine solution were used.

Nupercaine (Ciba), a quinoline derivative is issued in 2 cc. ampules containing 1 part to 200 of the drug in physiologic sodium chloride solution. It also is of a lighter specific gravity than spinal fluid and on ac-

count of its prolonged effect is sometimes preferable to spinocaine in cases where operations of more than $1\frac{1}{2}$ hours duration are anticipated. This drug does not cause as great vasomotor depression as do novocaine derivatives. Ephedrin is not used except as indicated by the individual case. Novocaine crystals dissolved in spinal fluid were used in only one case, nupercaine in only three cases and neocaine in only one case. The number of cases therefore in which anesthetics other than spinocaine were used in this series do not justify elaboration in this report.

TECHNIQUE OF ADMINISTRATION

Preoperative medication: The patient is prepared as for general anesthesia and on the night previous to operation a good night's rest is assured by the administration of some barbituric acid preparation, usually luminal grs. 3, or sodium amytal capsules 1. Barbiturates, Lundy has shown, are prophylactic against toxic symptoms due to procaine derivatives. One and one-half hours before operation the patient is given sodium amytal or luminal, dosage as above. This may be repeated in 45 minutes in excitable and nervous patients. One-half hour before operation the patient is given morphine sulphate grains $\frac{1}{4}$ and atropine sulphate grains $\frac{1}{150}$. The use of scopolamine was discarded because it was not necessary and often produced a semidelirious or noisy patient. The action of atropine is simply sedative, reduction of secretions with prophylaxis against lung complications and a possible reduction of excessive hyperperistalsis. With this preoperative preparation it has not been found necessary to put cotton in the ears, or to cover the eyes except in very rare and occasional cases. Incidentally, the eyes are usually covered with moist gauze for protection against glare of operating room lights or skylight.

As spinocaine (Metz) was used in the majority of cases in this series, the description of technic will be confined to its particular use for the most part. The technique is given in detail for in this largely lies the success or failure in anesthesia.

The equipment used is the Pitkin standard syringes and needles. The amount of solutions used routinely, unless the length of operation, blood pressure or condition of

the patient required alteration, was 2 cc. of ephedrin-novocaine solution for skin infiltration and 3 cc. of spinocaine proper for intradural injection. Exceptions to this are made by giving only 1 and 2 cc. respectively of these solutions in short operations on the lower extremity, some rectal, perineal and prostate cases, and in adolescents; also by increasing the dose of spinocaine proper to 4 cc. leaving the ephedrin-novocaine solution the same in rare and exceptionally long cases. The patient is turned on the side, knees flexed upon the abdomen, head bent forward, back bowed out, and shoulders in a straight line perpendicular to the table. Spinocaine should never be given with the patient in the sitting position. It is quite important not to have one shoulder out of line perpendicularly with the other, as such a position causes torsion of the vertebral column and thus difficulty in obtaining straight and direct entry into the most posterior arc of the dura may be experienced. When the patient complains of severe pain or so-called electrical shock in the extremities or in the back when the needle point is in the region of the cord this signifies that the needle has either strayed laterally and encountered the nerve roots or that the same thing has happened by introducing the needle too far forward thus going through or pressing against the dura on its anterior aspect. Anesthesia in the region desired is facilitated by the patient's lying on the opposite side during the puncture and injection. The spinocaine, lighter than fluid, rises to the desired side, producing anesthesia first in this region, thus eliminating any unnecessary delay. For example, for appendectomy the patient lies on the left side.

The spinal puncture is aseptically done in the usual manner, choosing generally the first, second, or third lumbar interspace, usually the second. This is quite safe as the spinal cord does not extend lower than the twelfth dorsal vertebra. The Pitkin puncture needle is introduced until semi-firm resistance is encountered and on further introduction there is a definite sensation as of something giving away. Experience will give one this unmistakable feel of entering the dura. When the needle is slightly withdrawn and stylet removed spinal fluid appears. With the empty ephedrin-novocaine

syringe the same amount of spinal fluid, as spinocaine solution to be injected, is withdrawn. This is important and will be discussed under causes of complications and sequelae. After the fluid is withdrawn, the syringe containing the spinocaine is attached to the needle. Be sure the spinal fluid can still be aspirated, then inject 1 cc. fairly fast—about the speed practiced in giv-

passage through the intraspinal ligaments; (3) administration is made easy; (4) the bevel of the dural puncture needle may definitely be introduced accurately in the desired position, namely, turned east or west (laterally) thus giving an easily closing longitudinal puncture wound in the dura.

At this point the patient is turned at once

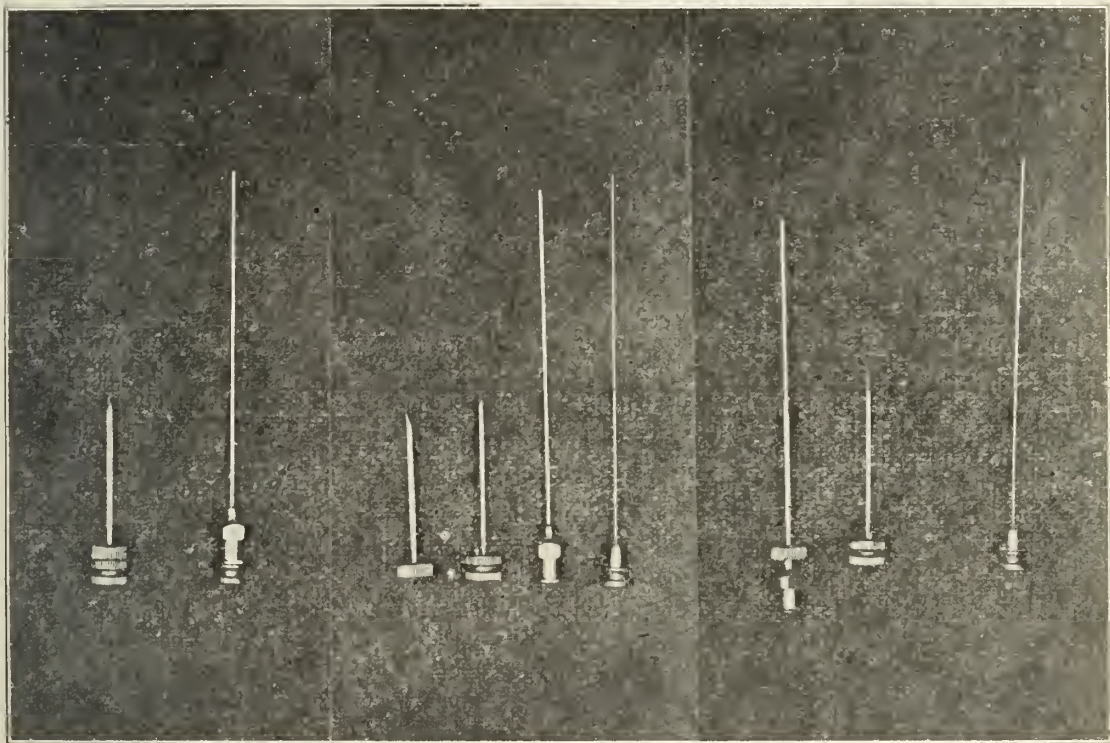


Plate I.

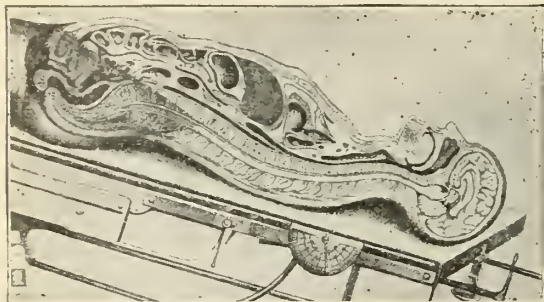
Photograph showing: (1) Lahey needle (left) and Pitkin needle (right) stylets inserted. (2) Same, stylets removed. (3) Same, Pitkin needle in Lahey needle as in administration of spinal anesthetic.

ing an ordinary hypodermic injection (the reason is given under causes of failures). One cc. is aspirated, 2 cc. injected, again 1 cc. aspirated, then injecting all of the remaining solution. (Repeated injection and aspiration is called barbotage.) The needle is removed (still attached to syringe) and the site of injection mopped with an alcohol sponge and bandage or collodion dressing may be applied.

The Lahey needle was used as an adjunct needle in doing spinal puncture in practically all cases in the latter portion of this series. (Plate 1.) The advantages of using this needle are: (1) the same needle that pierces the skin is not introduced into the dura; (2) because by its use the spinal puncture needle is not bent or made dull by

on to the abdomen, (first advocated by Sise and Woodbridge of Lahey Clinic), remaining in this position until anesthesia is obtained, as detected by pricking the skin with a needle or gentle pinch with forceps. While testing in this manner it is very poor psychology to ask such questions as, "Do you feel me stick you?" and "Am I pinching you?" Instead merely pinch or stick and watch the facial expression or only ask, "What am I doing to you?" or "Do you feel me touch you?" By reason of the patient's position lying face down, the spinocaine, lighter than spinal fluid, rises to the highest level, namely to the region of the posterior (sensory) roots, thus causing posterior root interruption and loss of sensation first. This undoubtedly diminishes any delay in

obtaining desired anesthesia. Using the above technic anesthesia may usually be expected in 1½ to 5 minutes, varying with the individual. The table is left perfectly flat until anesthesia is obtained and then placed in a five, ten or fifteen degree Trendelenburg position, depending upon the height of anesthesia desired as shown in



*Fig. 1. Table in 15 degrees Trendelenburg. Note Tiltometer. Spinocaine to first lumbar. Anesthesia of perineum and legs.

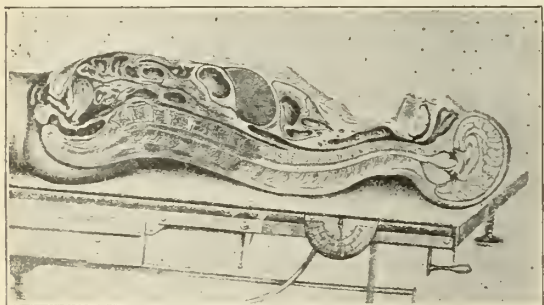


Fig. 2. Table in 10 degrees Trendelenburg. Spinocaine to tenth dorsal. Anesthesia to umbilicus.

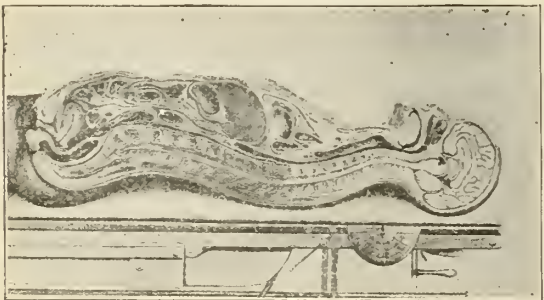


Fig. 3. Table in 5 degrees Trendelenburg. Spinocaine to seventh dorsal. Anesthesia to costal margin.

Figs. 1, 2, and 3. The patient is never placed in a ten or fifteen degree Trendelenburg position for a vaginal operation when a later laparotomy is intended, for the abdominal anesthesia will be partially

or completely lost by the time one is ready to begin the second stage of the operation. It is neither good usage nor conservative treatment to subject the patient to a second intraspinal injection for the same operation or combination of operations unless the extreme indication justifies it in the particular case.

The operative field may now be prepared and operation begun.

The taking of blood pressure readings at intervals throughout the operation is still considered a good and safe practice. The patient should be watched constantly by an anesthetist, doctor or someone especially trained in spinal anesthesia. Deaver practiced the routine administration of oxygen inhalations throughout operation in spinal anesthetic cases for psychic reasons and as prophylaxis against nausea and respiratory symptoms.

In this series of more than 300 cases, failures or partial failures occurred in approximately 5 per cent. This did not include four failures occurring on the same morning and in the same operating room in easy cases. The package of spinocaine from which these ampules were taken was subjected to examination and the solution found to have no anesthetic properties. On investigation the supply packages containing spinocaine were found lying on the radiator. The manufacturers when consulted stated that spinocaine is unstable when subjected to intense or prolonged heat.

Nearly all authorities admit failures in five to six per cent of cases. Two explanations of failure may be offered: (1) the injection of spinocaine was extra-dural; (2) there existed an idiosyncrasy to the drug. The first explanation seems to be most likely as in five cases of this series used as test cases, after failure to produce complete abdominal anesthesia, a second injection resulted in satisfactory anesthesia. These failures were undoubtedly due to slight movement of the needle after successful puncture and withdrawal of fluid, leaving the tip of the needle partially or wholly outside of the dural canal during injection. This occurrence again emphasizes the value of repeated aspiration and injection. The needle is not always extra-dural when unable to aspirate, but has its bevel too close to the lateral or anterior dural wall, in this

way causing blockage by dura when aspiration is attempted but at the same time allowing injection of solution due to the pressure of incoming fluid against obstructing dura displacing it.

Partial failures or failures to get anesthesia to the height desired may be explained by the following rules: (1) The upward extension of anesthesia is directly proportional to the speed of injection, the volume injected, the height of injection, and the position of the patient's body on the table (See Figs. 1, 2, and 3); (2) it is inversely proportional to the cerebrospinal fluid pressure and to the rate of fixation by nerve tissue.

Untoward Symptoms and Complication: Their Cause, Prevention and Management—

(1) Nausea, with or without vomiting—

Cause: (1) Vasomotor paralysis in spite of preanesthetic ephedrin, with bleeding into the splanchnic veins followed by hypotension and resulting cerebral anemia (same mechanism as in vomiting after fainting); (2) idiosyncrasy to novocaine preparations; (3) alteration of cerebrospinal fluid pressure; e. g., by injection of anesthetic preparation without previous aspiration, or by injection of solution in excess of fluid aspirated, or aspiration of fluid in excess of solution injected. A case of nausea following intrathecal injection of spinocaine has not been observed in this series where no blood pressure change occurred, no idiosyncrasy to the drug existed or where an amount of spinal fluid equivalent to spinocaine to be injected was aspirated. One exception to this is nausea following high abdominal exploration and manipulation. This is due to shock and vasomotor disturbance caused by tension and peritoneum and viscera receiving nerve supply from above the area of anesthesia.

Prevention: Vasomotor depression is usually prevented by sufficient preanesthetic dosage of ephedrin, by Trendelenberg position or by preoperative intravenous injection of fluids. Idiosyncrasy cases may be avoided by inquiry as to previous reaction to novocaine derivatives, as in tooth extraction or local operations; or by injection of $\frac{1}{2}$ cc. of 1 per cent novocaine or, better still, one ampule of ephedrin-novocaine solution

the day previous to operation and subsequent observation. The practice of injecting 1 ampule of ephedrin-novocaine solution hypodermically on the final preoperative night was carried out as a routine over a period of 6 months in all cases in which there was no available information as to previous reaction to novocaine, following a fatality due to idiosyncrasy. This is the only novocaine fatality in this series. The patient was a large negro woman weighing something over 250 pounds with a fibroid uterus extending to the ensiform cartilage. Immediately following the skin infiltration with ephedrin-novocaine solution the patient complained of dyspnea, began singing and talking at random, fainted and became cold and clammy, pulse imperceptible, heart rate increased from 90 to 160 and continued to rise, and complete respiratory failure followed. Fortunately the spinal puncture had just been completed when the patient fainted and the spinocaine solution was not given. Drugs of all description were administered including intracardiac injections. Trendelenberg position, artificial respiration and other stimulative and restorative measures were employed without success. Since Lundy proved through experimentation with dogs that preanesthetic barbituric preparations are specific prophylaxis against procaine toxicity, our fears of idiosyncrasy cases have been greatly decreased.

Nausea from disturbance of the cerebrospinal pressure may be avoided by the aspiration of an amount of spinal fluid equal to that of spinocaine to be injected.

Management: Nausea may be relieved by one or more of the following measures: increasing Trendelenberg position, administration of ephedrin (always kept in readiness), application of iced gauze to throat and face or ice by mouth (reflex inhibition), inducing deep respiration either by request or by administration of carbon dioxide inhalations.

(2) Respiratory Embarrassment.

Causes: (1) Vasomotor depression, (2) cerebral anemia, (3) rising of the anesthesia and muscle paralysis above the level of the sixth dorsal vertebra thus causing a paralysis of some of the intercostal muscles (accessory muscles of respiration), (4) excess dosage of morphine, (5) failure to give

pre-operative atropine (respiratory stimulant).

Prevention and management: Administration of ephedrin, proper Trendelenberg, having patient to breathe deeply or administration of atropine.

Regarding the height of anesthesia the following anatomic facts should be kept in mind. For operations upon the lower extremity the anesthetising solution must extend as high as the first lumbar vertebra; for operations below the umbilicus extension to the tenth dorsal vertebra is necessary, and for operations to the costal margin

fore, that if the anesthesia involves only the lower lumbar and sacral roots there will be no effect upon the blood pressure but if the fibers supplying the great splanchnic vessels and those of the upper part of the body are affected a great fall in blood pressure will result.

(3) Disappearance of relaxation during operation.

Causes: (1) Insufficient volume of spino-caine used, (2) improper Trendelenberg, (3) prolonged operation overstepping time allowance (usually 75 to 90 minutes).

Means of prevention: Proper technic and management.

Management: Infiltration of muscles locally with novocaine solution, (2) administration of general anesthesia, (3) morphine administration will often control slight spasticity.

(4) Loss of anesthesia (usually only in upper angle of incision)

Causes: Same as for loss of paralysis.

Management: Novocaine locally and same as for loss of relaxation mentioned above.

(5) Restlessness, excitability, irritability (in the absence of pain or discomfort)

Causes: (1) Omission or improper dosage of preoperative sedative or narcotic (insufficient dosage of barbituric preparations and the use of scopolamine are usually etiological); (2) poor psychology in handling the patient is a most common error. "I a just going to stick you with a needle, Do not jump". "Do you feel me stick you"? "do you feel me pinch you"? "I am operating now, can you feel anything"? "Do you feel sick at your stomach"? "Can you breathe all right"? are common questions employed by the poor psychologist or the unthoughtful or inexperienced spinal anesthetist. The power of suggestion thus introduced will often produce an apprehensive, disturbed or uncooperative patient. This is an argument for having in attendance an experienced anesthetist. Of course if the patient is completely "knocked out" by preoperative sedatives or narcotics psychology plays no part. However, in the "knocked out" patient some of the beauties and advantages of spinal anesthesia are lost.

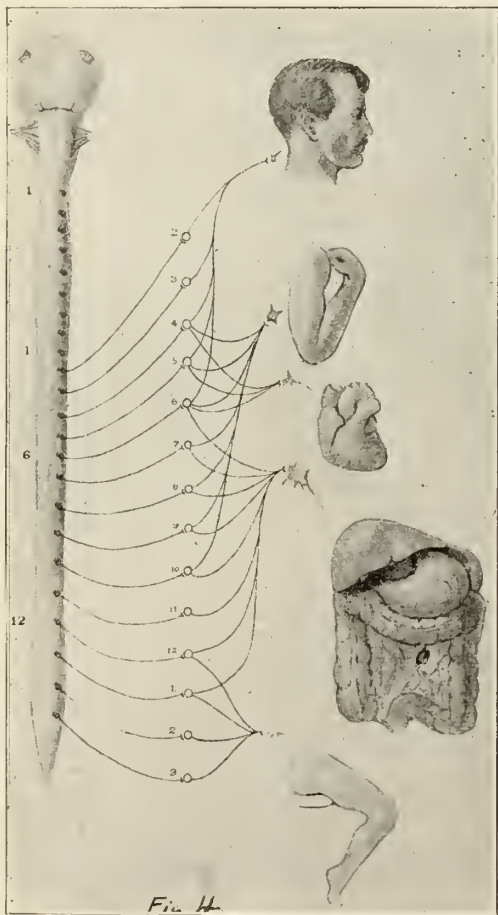


FIG. 4: (After Babcock) Drawing showing visceral and surface enervation by spinal nerves. Demonstrates height to which anesthetising solution must rise for the different regional anesthetic requirements.

the solution must reach as high as the sixth dorsal vertebra. (See Figs. 1, 2 and 3.) The white rami through which sympathetic impulses are carried to the entire body are associated only with the anterior roots from the second thoracic to the third lumbar vertebra. (See Fig. 4.) It is evident, there-

(6) Fainting.

Causes: Cerebral anemia.

Prevention: (1) Preoperative ephedrin, (2) proper Trendelenberg, (3) preoperative administration of intravenous fluids.

Treatment: Same as above, usually increasing Trendelenberg is sufficient.

(7) Referred chest pains (with exploration or with handling of viscera)

Cause: Failure of anesthetic to reach height sufficient (6th dorsal vertebra) to prevent reflex pain from handling viscera below the diaphragm.

Prevention: Proper technic.

Treatment: (1) Stopping visceral manipulation, (2) decreasing Trendelenberg if early before spinocaine has become fixed to nerve tissue, (3) administration of gas or other general anesthetic.

(8) Postanesthetic headaches.

Causes: (1) Disturbance in cerebrospinal fluid pressure due to the aspiration of a quantity of fluid in excess of or less than the amount of spinocaine injected; (2) failure to keep the patient in proper Trendelenberg for a sufficient time, usually about 4 to 6 hours, following the intrathecal injection of spinocaine; (3) mild form of idiosyncrasy to procaine derivatives; (4) cerebral congestion due to venous stasis incident to either excessive preoperative sedation or narcosis or to excessive Trendelenberg postoperative.

Prevention: Methods are evident.

Treatment: Proper Trendelenberg, turning patient upon the abdomen for one or two hours and anodynes.

(9) False sense of position of lower extremity, postoperative.

This is often disturbing, the patient thinking that the legs are crossed, drawn up or in various unnatural positions.

Cause: Loss of muscle and joint sense incident to spinal anesthesia which is always present but only seldom disturbing.

Treatment: Demonstrating to the patient that no such position exists, and administration of narcotics to dull perceptions.

POSTOPERATIVE COMPLICATIONS

Complications due to spinal puncture per se as meningitis, nerve injury or meningismus are indeed rare. Postoperative com-

plications generally are considerably less following a properly given and properly managed spinal than following general anesthesia. Distension, paralytic ileus and nausea rarely, if ever, occur following spinal anesthesia. Catheterization is far less frequent in spinal cases. Lung complications are less frequent if attention is paid to changing position of patient postoperative, and atropine is used preanesthetic. According to Stout of Wisconsin, lung complications occurred in only one-seventh as many cases as following inhalation anesthesia in his series of six hundred cases. Strain on sutures as occurring during reaction from general anesthesia is practically eliminated. The patient may take fluids during operation and early after operation. The postoperative burdens of the nursing staff are greatly decreased. No demonstrable damage to liver or kidneys is known following spinal anesthesia. Surgical shock is practically eliminated. This is because spinal anesthesia constitutes an effective nerve block to pain originating in the operative field and hence removes this possible contributing factor in the production of shock. Especially are rectal and prostate cases far more satisfactory than under inhalation anesthesia.

REPORT OF CASES

In this series of over 300 cases in which spinal anesthesia was used for surgery below the diaphragm, the accompanying table is explanatory:

SERIES OF CASES
Table No. 1

Cases (Type)	No. of Cases	Type of Spinal
Incisional Inguinal Hernia: Femoral Umbilical	(Including incarcerated cases) 44	42 Spinocaine 1 Novocaine 1 Nupercaine
Acute Subacute Catarrhal Appendicitis: Chronic Abscessed Ruptured with General Peritonitis.	152	132 Spinocaine 11 Neocaine 9 Novocaine
Pelvic Operations: Vag. Lap. Lap + Vag.	49	46 Spinocaine 2 Nupercaine 1 Neocaine
Intestinal Perforation: Traumatic Gunshot	8	Spinocaine
Ruptured Ulcer: Gastric Duodenal	5	Spinocaine

Cases (Type)	No. of Cases	Type of Spinal
Prostatectomy	4	Spinocaine
Intestinal Obstruction	7	Spinocaine
Gall Bladder and Duct Operations	7	Spinocaine
For Relief of Paralytic Ileus	4	Spinocaine
Kidney and Ureter Operations	4	Spinocaine
Undescended Testicle	4	Spinocaine
Gastroenterostomy	2	Spinocaine
Caesarean Section	3	Spinocaine
Traumatic Abdomen	1	Spinocaine
Hemorrhoids	2	Spinocaine
Amputations: Foot Leg	1 2	Spinocaine
Removal of Dislocated Semilunar Cartilage	2	Spinocaine
Open Reduc. Femur Bone Ops: Osteotomy Tibia	1 1	Spinocaine
Pilonidal Cyst	1	Spinocaine
Lumbar Sympathectomy	1	Spinocaine
Extensive Debridement of Lower Extremity	1	Spinocaine

The youngest case was 11 years of age, the oldest 74, the greatest percentage ranging from 20 to 30 years. There were no anesthetic deaths.

In a few cases where operation extended beyond one and one-quarter to one and one-half hours, it was necessary to supplement the spinal anesthetic with inhalation anesthesia or novocaine injected locally into the abdominal wall. This procedure does not constitute any handicap or disadvantage to the patient and the advantages of the spinal anesthetic more than compensate. Also, the patient was spared an hour or more of general anesthesia. Two cases retained complete abdominal anesthesia and relaxation for more than two hours, and in one case a good anesthesia lasted for over three hours' time. Blood pressure readings were taken routinely and in practically every instance a trained and competent anesthetist was in observing attendance during the operation. It is not necessary, as formerly practiced,

to use a side table for the arm upon which blood pressure readings are taken. A Tyco's sphygmomanometer is used, placing the stethoscope diaphragm in the cubital fossa and wrapping the arm band around the arm over the stethoscope tubing, stethoscope being toward the patient's head. By use of such arrangement, the patient's arm may be placed by the side as for other anesthesia with no inconvenience to operator or patient.

Where relaxation was most advantageous to operation, spinal anesthesia was most appreciated by the operator, as for example, in cases of intestinal perforation, gallbladder operation, ruptured gastric or duodenal ulcer, gastro-enterostomy, kidney operation, intestinal obstructions. Results in cases of paralytic ileus were only partially satisfactory, which may be due to difficulties in differential diagnosis. Benefit here is by interruption of the reflex sympathetic inhibition of peristalsis. Spinal anesthesia is particularly of advantage in obstruction cases, the reason being that they are usually acutely ill patients, and shock, disturbance in metabolism, etc., cannot be tolerated. Such patients should always be given intravenous fluids before any operative procedure, particularly if spinal anesthesia is chosen. Sedatives with local anesthesia and gas sparingly are perhaps wiser in severe cases approaching a moribund condition. The administration of spinal anesthesia is not always of differential diagnostic aid between paralytic ileus and intestinal obstruction, and it is safer to explore where doubt exists after administration of spinal anesthesia, even if bowel evacuation does occur, the reason being that there may be a gangrenous area present high in the intestinal tract, the evacuation having occurred from the bowel below the site of obstruction. Anderson, of the Lahey Clinic, in a recent case report has called attention to illustrative cases in their clinic. Blood pressure changes in the average cardiovascularly normal case are illustrated in the accompanying chart.

After the adoption of the recommended technic in this series, the average rise in blood pressure occurred in from ten to thirty minutes, following intradural injection and the maximum fall occurred in from thirty to fifty minutes.

BLOOD PRESSURE CHART

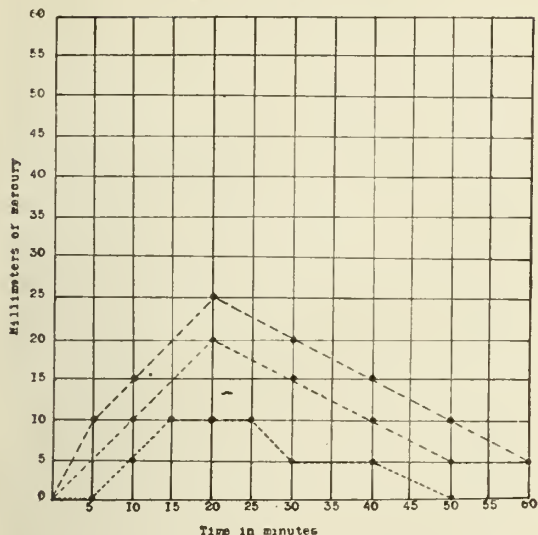


CHART: Showing the average time and amount of blood pressure variation following the administration of spinal anesthetic for complete abdominal anesthesia.

Burch and Harrison have shown, through experimentation with dogs, that if ephedrin is given intraspinally before the injection of spinocaine no decline in blood pressure occurred, even though successively large doses of spinocaine were used. No mention of resulting cardiac disturbance was made in their report. This procedure has been carried out by another Atlanta surgeon to the author's knowledge without bad result.

COMMENT

Spinal anesthesia is neither recommended as a routine, nor is it condemned in properly selected cases. It is my belief that the proper handling of apparently trivial and small points in technic and management of spinal anesthesia cases, together with proper regard for contraindications will give this type of anesthesia a definite and permanent usage in surgery below the diaphragm. This constitutes the reason for such detail and technical presentation in this article. Without question hazardous results and fatalities will not again cause spinal anesthesia to be considered an unsafe and undesirable procedure when it is used in selected cases by intelligent and experienced users. More than one authority of eminence has made the point that most of the bad results from administration of spinal anesthesia occur with the occasional user whose chief qualification and experience is simply his desire to do so.

SUMMARY AND CONCLUSIONS

- 1—Spinal anesthesia does not fulfill all of the requirements essential to the ideal anesthetic for all abdominal surgery. Its use is recommended in selected cases where contraindications do not exist. It is a safe anesthetic in experienced hands where indicated.
- 2—It is contraindicated in patients with a weak cardiovascular system (where a sudden fall in blood pressure may be hazardous), in patients on the verge of collapse, severe hemorrhage cases (before vascular fluid has been replaced), where the patient is very ill and the operation may be successfully carried out under local anesthesia.
- 3—It is indicated especially in operations below the diaphragm where the operation is not to exceed one and one-quarter hour and particularly in the presence of diabetes, respiratory disease, damaged kidneys, or liver disturbance. It is also indicated in long operations where it is desirable to spare the patient an hour or more of general anesthesia.
- 4—Failures occur in general in from four to six per cent of cases and are due chiefly to extra-dural injections, seldom to idiosyncrasies and rarely to impotent solutions. Partial failures or failures to induce or maintain anesthesia to the height desired are due to faulty technic in administration and management.
- 5—Untoward and complicating symptoms sometimes occurring are: nausea, respiratory embarrassment, fainting, referred or reflex pain, headaches, loss of muscle relaxation, loss of desired anesthesia, restlessness and excitability and exaggerated sense of false position of lower extremity. These are avoidable for the most part with proper technic and management.
- 6—Postoperative complications and sequelae are probably reduced by the use of spinal anesthesia in selected cases.
- 7—The advantages of spinal anesthesia to the surgeon are: complete and continuous relaxation; a quiet, but responsive patient and reduced fear of postoperative complications. To the patient they are: freedom from shock, incident to operative handling of tissue; lack of direct irritation to lungs, kidneys and liver

and the absence of any direct affect upon metabolism.

- 8—The disadvantages of spinal anesthesia are: its limited definite duration (sometimes of insufficient length for the prolonged operation), occasional relative uncertainty of its vasomotor effect, occasional untoward symptoms during operation and the fact that because of its advantages apparent ease and safety in administration it may often be used by inexperienced workers in spinal anesthesia.

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DISCUSSION

Dr. S. R. Benedict (Birmingham): Dr. York's paper was so complete in every detail that very little remains to be added.

However, there are one or two points I would like to impress. The use of spinal anesthesia in rupture of the abdominal viscera and in obstructions is an ideal procedure. As to whether it should be used in general peritonitis is a doubtful question; I think it can be used if the infection is localized.

Dr. York stated that a man who is using spinal anesthesia occasionally and where the practice is not generally recognized should watch his step in these strenuous times. There is always a possibility of a damage suit. I want to emphasize the warning.

The essayist did not refer to caudal and sacral anesthesia. I prefer sacral anesthesia for hemorrhoids or a rectal abscess. We have had about fifty-four cases, most of them hemorrhoidectomies, and have not experienced any difficulty. I do not know of any reason for going into the spinal canal if the operation is in the perineal region.

Dr. Jerre Watson (Anniston): I wish to say I have thoroughly enjoyed the discussion on spinal anesthesia brought to us by Dr. York.

I wish also to direct our attention to the value of spinal anesthesia over any other known form of anesthesia in view of one fact that stands out prominently. All of the other known sedatives for general anesthesia, according to Crile, lower the electric potential of the cells of the body. When considered from that standpoint spinal anesthesia stands alone, except with regional and local anesthesia, as preventing the lowering of the electric tension of the cells, and consequently the lowering of the resistance of the patient. This, no doubt, accounts for the rapid recovery after operation and

the almost entire absence in most cases of post-operative complications.

I wish further to direct attention to another thing, and that is the choice of anesthetic agent. I am of the definite opinion that we should bear in mind specifically the variation in the specific gravity of the spinal fluid. The spinal fluid varies in specific gravity from one thousand and two to one thousand and nine. Spinocaine carries a specific gravity of one thousand and five. It carries with it also starch and strychnine. You have no means of knowing when you administer spinocaine what the relation between the spinal fluid and the spinocaine is. In other words, when you administer spinocaine you do not know whether you are giving a product in excess of the specific gravity of the spinal fluid of the patient or whether it is less, and the idea of the comparison made to the bubble in the level in which it rises according to the patient's position, in many cases, loses its value.

I should like further to direct our attention to the importance of testing the reaction of the patient to novocaine. I have seen those patients in my practice who have definite idiosyncrasies to novocaine. An administration of novocaine in one case without adrenalin produced reactions that were alarming. The same patient had similar reactions at the hands of a dentist.

Therefore, it seems well to bear in mind you have three classes of patients to consider: first, those with normal reaction; second, patients in whom novocaine produces no results; and third, patients that may have a severe reaction.

Spinal anesthesia in the hands of a proper man, with the use of proper technique, which, of course, means the proper man, stands alone in the realm of anesthesia unless contraindications are present.

POSTOPERATIVE PULMONARY COMPLICATIONS*

JAMES F. ALISON, M. D., F. A. C. P.
Selma

Non-fatal pulmonary complications following operations are relatively frequent and fatalities are not rare. Smith and Morton¹ in 1929 stated that in the best surgical practices a death from pneumonia occurred after each 240 major operations. This rate may have decreased since that time, due to more effective prophylaxis and new methods of treatment, but it is still appreciable.

Coryllos,² after extensive study and experimentation, believes that the relation between the usual pulmonary complications, i. e., bronchitis, atelectasis, pneumonia and possibly abscess or even gangrene of the lung, is one of degree, each representing a

*Read before the Association in annual session, Mobile, April 21, 1932.

*From the King Memorial Hospital.

phase of the one postoperative pulmonary complication, namely, bronchial occlusion.

His theory may be briefly stated as follows: After operation, especially abdominal operation, there is interference with movement of the chest, particularly the diaphragm, thus lessening the vital capacity and causing a stasis of the bronchial secretion which produces an irritation of the bronchial mucosa, which in turn, produces more secretion. Usually this secretion is removed by coughing and change of posture but in some instances a bronchial occlusion results and an obstructive apneumatoxis follows. Then the fate of the lung parenchyma depends upon the type and virulence of the micro-organism present in the affected part.

On the other hand, Dunn³ believes that all postoperative pneumonia is the result of inspiration of infected material at the time of operation. Franken,⁴ acting on this hypothesis, was able to show a marked reduction in the incidence of postoperative complications by preoperative oral hygiene.

Henderson⁵ has shown that the natural defense of the lungs is the maintenance of adequate drainage which is accomplished by the ciliated epithelium, by muscular contraction of the airways and by coughing. He also demonstrated the significant fact that depth of breathing is the prime factor in maintaining patency of the lungs. He and his co-workers⁶ were able to produce typical atelectasis in dogs by occlusion of a bronchus with a rubber bag. They went further and insufflated a culture of virulent pneumococci into the bronchus before occlusion. In one group the occlusion was removed the following day and in the second was allowed to remain. In the first group only a small percentage developed pneumonia but in the second group a typical, uniformly fatal pneumonia developed. These experiments were substantiated by other investigators who were able to relieve postoperative atelectasis and prevent the development of pneumonia by removing the occluding agent with the bronchoscope.⁷ Coryllos reported a series of medical lobar pneumonia patients who were markedly relieved by aspirating the bronchus of the affected lobe. This procedure was followed by profuse expectoration, comparative comfort and shortening of the course of the

disease. These results were strong support for his hypothesis that medical and postoperative pneumonia were both primarily caused by bronchial occlusion. Brown⁸ recently reported experimental and clinical observations which showed that the type of bronchial secretion determined the type of atelectasis produced. He found that thick, tenacious mucus plugged the larger bronchi, whereas the thinner mucus tended to dispersion and a blocking of the finer bronchi and bronchioles, producing a scattered lobular atelectasis. Band and Hall⁹ demonstrated that certain factors, (a) a viscid intrabronchial secretion, (b) abolition of the cough reflex and (c) limitation of respiratory movement, acting in combination, may produce collapse.

The roentgenogram of a massive atelectasis is fairly characteristic. The heart is pulled to the affected side and the diaphragm is markedly displaced upward. The opposite diaphragm is usually lowered. The extreme displacement of the heart and diaphragm is almost diagnostic. In the lobular type of atelectasis there are small areas scattered thru the affected part. The pneumonia resulting from inspiration of infected material and the so-called hypostatic pneumonia present a picture similar to the medical bronchopneumonia.

The usual history of patients developing postoperative pulmonary complications is: A few hours after operation there is an increase in bronchial secretion and increasing cough and difficulty in raising the sputum. A few hours later, there is a sudden rise in temperature, pulse and respiration, patient becomes cyanotic and dyspneic and shows unmistakable signs of pulmonary pathology. A picture at this time would show a massive atelectasis. This condition may, and usually does arise following a clean, short operation regardless of the type of anesthetic used. The time to begin treatment is when the increased bronchial secretion is first noticed. The subsequent atelectasis may be avoided by early institution of carbon dioxide inhalation. The effect of this treatment after the atelectasis has occurred is well demonstrated by the pictures in Figure 1. After 12 hours' treatment the lung had approximately regained its usual proportions. However, early institution of treatment is imperative for such results.

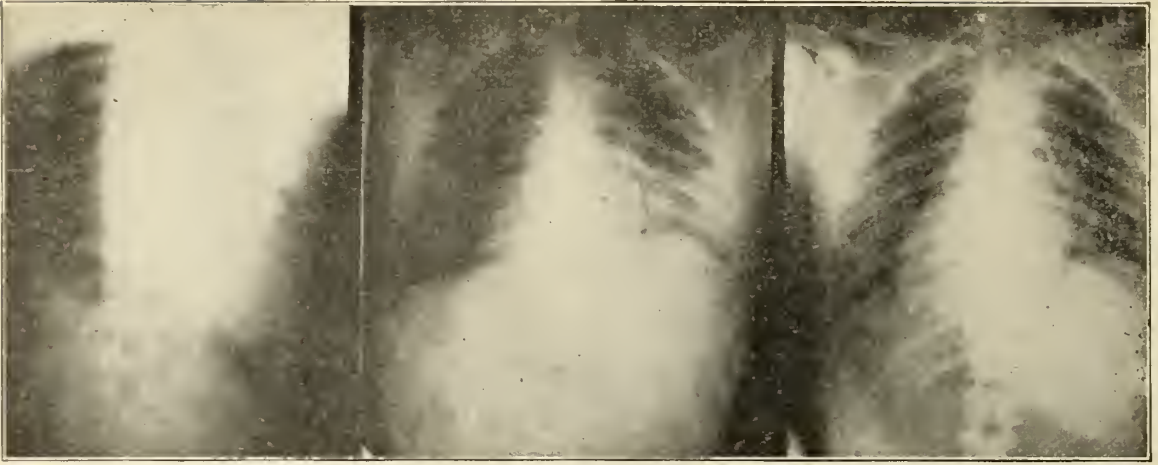


Figure 1. The picture at the left shows a massive atelectasis occurring 16 hours after a simple appendectomy under ethylene. Note the extreme displacement of the heart to the right and the elevation of the right diaphragm. The middle picture was made 6 hours after beginning treatment with carbon dioxide. The picture on the right was made 12 hours after the institution of treatment and shows the lung proportions approximately normal.

Many investigators believe that a large proportion of the postoperative pulmonary complications are due to pulmonary embolism in its various forms. Wharton and Pierson¹⁰ state that 50% of the noteworthy pulmonary complications occurring after abdominal and gynecologic operations are embolic in nature. Badgley and Smith¹¹ estimate from various statistics that the incidence of embolism is about 0.2% in all operations. It is possible that the milder degrees of embolism may be present with few if any, signs or symptoms to attract attention.

This condition will not be discussed as it is quite different in etiology and treatment from the other postoperative complications mentioned above. It appears, however, that the estimate of the above authorities is rather high, possibly because of the great difference in degree, many passing unrecognized.

COMMENT

The idea that exposure is a prime factor in the causation of pneumonia following operation is still prevalent and protection of the patient on the trip to and from the operating room is stressed in the textbooks. During the past ten years, 1,700 negro patients have been operated upon at the King Memorial Hospital and transported immediately after operation, per ambulance, to the negro hospital, a mile distant. Of this number, only two have developed complications referable to the lungs and in both there was pre-existing respiratory infection.

It is routine practice in nearly all hospitals to prepare the "ether bed" for the reception of the patient from the operating room. The bed is superheated by hot water bottles or electric appliances and blankets piled upon the anesthetized patient and tucked in firmly about the neck. The patient is given a first-class hot pack and sweating. In those with dehydration and low blood pressure, further desiccation and lowering of the pressure takes place. It is hard to understand the rationale of this procedure. In the light of the present knowledge of the cause, prevention and treatment of postoperative pulmonary complications, the old theories and practices should be discarded.

It is not within the scope of this paper to discuss postoperative treatment, such as stimulation of the patient suffering from surgical shock, but the physiologists have shown that somatic stimulation by increasing muscle tone is far superior to the usual methods of caffeine, atropine, etc., administered hypodermatically. Muscle tone may be increased by increasing the depth of respiration with the result that the stagnated venous blood of the viscera is forced back into the active circulation with relief of symptoms.

Statistics vary greatly with different sources but every recent report has shown a decrease in the incidence of pulmonary complications following the institution of routine postoperative hyperventilation.

PROPHYLAXIS

The importance of routine preoperative examination cannot be too strongly emphasized. Patients with acute respiratory infections, asthma, severe oral sepsis and smokers with chronic coughs should be recognized and the advisability of operation and choice of anesthetic given careful con-

pulmonary complications, especially atelectasis. Scott and Cutler¹³ showed that the liability to postoperative complications was greatly reduced, indeed, almost eliminated by routine administration of carbon dioxide at the termination of operation and anesthesia. Lundy,¹⁴ of Mayo Clinic, advocates the use of carbon dioxide in 5% concentra-

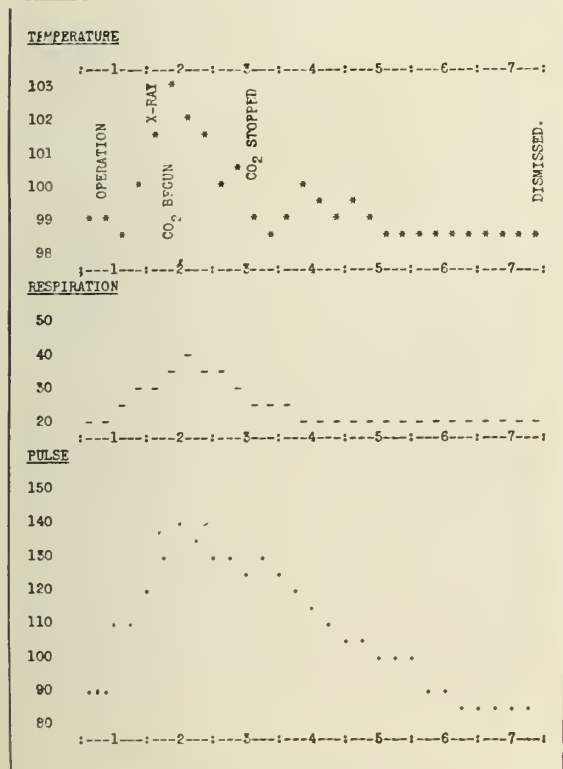


Figure 2—Clinical Chart

sideration. The anesthetic should be carefully and skilfully administered. The danger of aspiration of infected material during the course of anesthetic should be kept in mind. The dressings of abdominal wounds should be applied so that the chest motion is not limited. The patient's position should be changed frequently after the return to bed. Morphine should be used sparingly, substituting the barbituric acid compounds wherever possible. The most important factor in prophylaxis is routine hyperventilation with carbon dioxide at the termination of the operation.

The use of carbon dioxide in connection with anesthesia was introduced by Henderson et al¹² for the purpose of rapid etherization but later they found that the most important results of the deep breathing thus produced was the prevention of

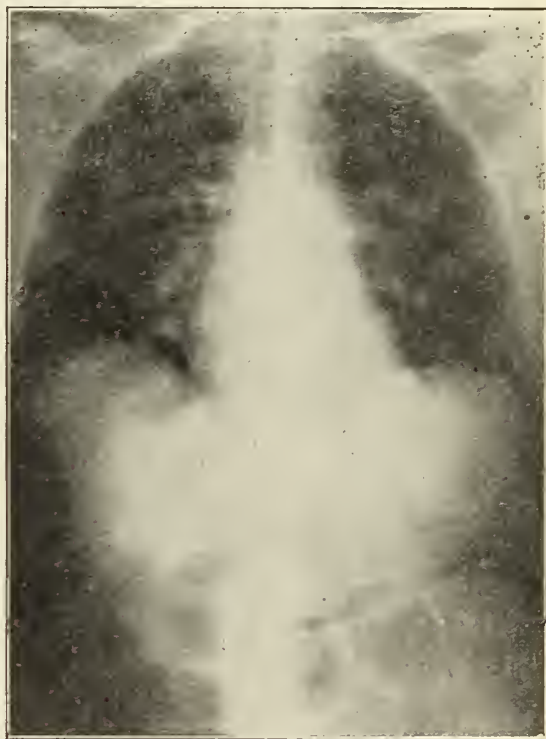


Figure 3. Diffuse bronchopneumonia resulting from inspiration of enteric material at the time of operation.

tion in oxygen in place of pure oxygen in anesthesia with ethylene and nitrous oxide. This combination insures regular, deep respiration, slightly deeper anesthesia and ventilates the lung bases. Under this anesthesia the breathing is smooth and the color remains good. At the termination of the operation, hyperventilation is secured by administering carbon dioxide in combination with oxygen or air.

TREATMENT

Scott¹⁵ drew attention to the great therapeutic value of carbon dioxide in the treatment of postoperative pulmonary complications. This treatment is specific for atelectasis. Sante¹⁶ showed that placing the patient on the unaffected side, with head lowered, secured better drainage and resulted in relief in the majority of patients. Lee¹⁷

first treated these patients by bronchoscopic removal of the occlusion. This, of course, requires an expert. However, the treatment with carbon dioxide is simple, requires no great equipment and is generally available.

The equipment necessary to carry out prophylactic hyperventilation consists of a

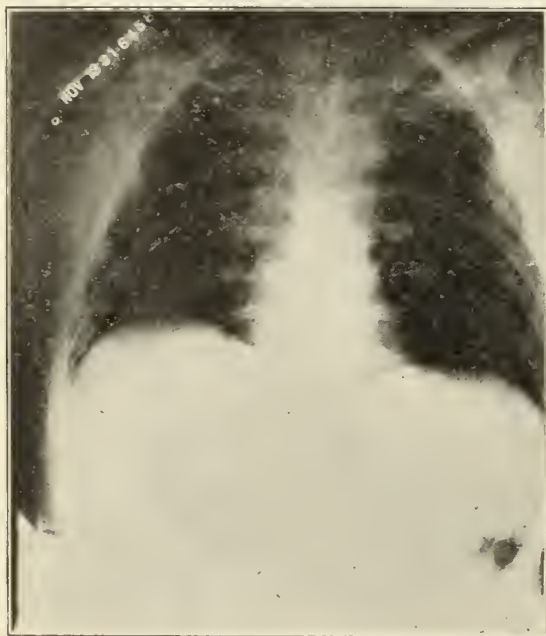


Figure 4. Lobular atelectasis.

small tank of carbon dioxide, either pure or 30%, a rubber tube to connect the tank valve and the free end to go under the ether mask. The gas is turned on and immediately vigorous respiration occurs and as a result the lungs are completely expanded. Two to five minutes of hyperventilation is sufficient.

The carbon dioxide is administered therapeutically under an oxygen tent although it may be given through a Haldane mask inhaler. Administration of the gas for 15 to 30 minutes of each hour is the usual method. It is interesting to note here that the inhalation of carbon dioxide is proving to be a valuable adjunct in the treatment of acute bronchitis and the early medical pneumonias.¹⁸

SUMMARY

1. Postoperative pulmonary complications are more frequent than commonly supposed.

2. Current theories of causation are reviewed.
3. Effective, simple and inexpensive methods of prophylaxis and treatment outlined.
4. Demonstration of the usual roentgenographic pathology of postoperative pulmonary complications.

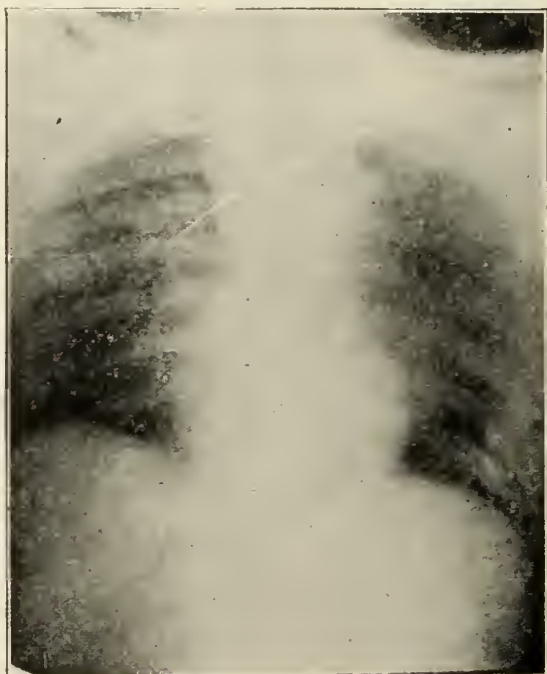


Figure 5. Pneumonia resulting in an abscess. The pneumonia resulted from aspiration of enteric material during operation. This patient also had an aneurism. Ultimate recovery.

CONCLUSION

Routine hyperventilation with carbon dioxide should be employed after every major surgical procedure, regardless of the type of anesthesia used. If the complication should develop, early institution of treatment with carbon dioxide is indicated.

515 Mabry Street.

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INTERNAL INJURIES WITHOUT PENETRATING WOUNDS*

L. J. JOHNS, M. D.
Birmingham

In this day of industrialism, rapid transportation, complex machinery, and the dangers to which men are more or less constantly exposed, accidents of one kind or another have grown to be quite a factor, and the handling of these cases by the hospital and the surgeon has taken on greater proportions in the more recent years. One can never tell at what moment he may be called upon to treat a serious injury. Now-a-days, accidents are taking a great toll of human life, and a goodly number of these unfortunates, both children and adults,

either die before help can arrive, or are so far gone that surgical interference would be both futile and useless.

Truly speaking, internal injuries may occur in any hollow compartment of the body, and may thus be said to be either intracranial, intrathoracic, or intra-abdominal. Intracranially we may have fracture or crushing of the skull with depression of parts giving all the classic symptoms calling for surgical intervention for relief; or we may simply have a lacerated brain and rupture of vessels giving extensive hemorrhage, with or without actual fracture of one or both plates of the skull without penetration, which may call for surgical intervention. In the thoracic cavity we may have force applied over the precordial area sufficient to paralyze the vital centers and produce cardiac death. Piercing of the lung tissue by broken ribs from crushing injuries may produce lung abscesses or hemorrhagic pleurisy, which may call for surgical treatment.

Having hurriedly gone over the first two classifications, we shall now proceed to concentrate our efforts on that great class of non-penetrating intra-abdominal injuries ordinarily referred to by laity and physician as "internal injuries". Internal injuries are universally confusing and oftentimes tax our ingenuity to the utmost. They present problems for diagnosis and clarification in order to determine if they are operative, and if so, when, where and how. In this they differ materially from the penetrating abdominal wounds, which usually call for immediate surgery. The particular features of an individual case and the degree of promptitude and accuracy in diagnosis and treatment will be the measure of success achieved in the handling of internal injuries of serious import.

Not all internal injuries are surgical. A great many cases which apparently upon first examination appear to have serious abdominal injuries, which would call for surgical treatment, clear up sufficiently after being treated for shock so that surgery is not a necessity. On the other hand an extremely slight sign of injury to the abdominal wall, or even no sign at all of injury to the abdominal wall, may be present in a case in which there is a very severe intra-abdominal injury, or even multiple injuries,

*Read to the Association in annual session, Mobile, April 21, 1932.

which, if left undiagnosed and unoperated, would most certainly terminate fatally. Although shock is not a necessary accompaniment of every abdominal injury, most patients with serious abdominal injuries present symptoms of severe shock when first injured, or first admitted to the hospital. The condition of shock shows wide variations, which may not be at all correlated with the severity of the trauma; nor does the intensity of the shock always allow deductions as to the character and seriousness of the organic injuries present. Shock is represented by pallor, sweating, restlessness, shallow respiration, thin, rapid pulse of poor volume, lowered blood pressure, nausea, vomiting and thirst. In addition, we may have generalized abdominal pain, painful respiration, board-like rigidity of the abdomen, generalized abdominal tenderness, usually more acute in the region of the injured viscus, and increase of white blood cells. Peristalsis is usually not heard with the stethoscope, and percussion is apt to reveal only generalized tympany; however, not all abdomens are tympanic. Shifting dullness is seldom detected unless there be considerable fluid present; some have said at least one quart or over. In cases of ruptured hollow viscus the diagnosis may be definitely determined by the x-ray, which will usually show gas below the diaphragm.

If the patient is in severe abdominal shock treatment must be instituted: Trendelenburg position if not contraindicated, heat, morphine, subcutaneous and intravenous normal salt solution, and, in cases that exhibit more profound shock, the use of glucose and insulin is indicated. It is well not to give over 500 cc. of any fluid in the vein at one time in these cases for fear of overloading, overtaxing and water-logging the heart. Rather do a repeat if necessary. Glucose is supplied in handy, sterilized ampules each of which contains 10 grams in 20 cc. of solution. This may be given intravenously without dilution if so desired, or, if greater fluid volume is desired it may be given in saline solution. Insulin, 1 unit to 3 grams of glucose, is given in the usual manner to burn up the glucose. Half of the required dosage of insulin should be administered just after starting the intravenous injection and the remainder at the

end of the process. In the more serious cases transfusion of whole or citrated blood is an exceedingly valuable procedure.

After a few hours' treatment of shock, if the blood pressure is raised to a safe operative level, usually 80 to 100 systolic, operative interference can be undertaken if the lesion demands it. If the patient does not react and a definite diagnosis of hemorrhage can be made, laparotomy should be performed immediately. All perforating lesions of the hollow viscera, massive hemorrhages from the liver, spleen and mesentery, all ruptures of the bladder and urethra, require surgery. Great care should be used in the operative technique not to increase the already existing shock. Gentleness combined with speed is ideal but safety should not be sacrificed for speed. We must proportion the shock of the proposed surgical procedure to the estimated strength of the individual patient, for a live patient who will require secondary operation is better than a dead one who has had too much. Following operation in these cases treatment will depend largely upon the extent of the operative procedure and the reaction of the patient. The same measures advocated for use before the operation are of almost as much value after operation, especially in the replacement of fluid lost, and to overcome what operative shock may be present.

As the type of the abdominal injury depends to a great extent on the nature of the violence, a classification of the different forms of blunt force is given. There are two main categories:

(a) Generalized violence, or trauma that involves the abdomen more or less as a whole. Examples of this comprise accidents in which the patient is run over by a vehicle, falls from a height, being compressed between two colliding objects, or is crushed by a falling mass.

(b) Localized violence that occurs when an object with a limited area of impact comes in contact with the anterior abdominal wall. Examples of this type include kicks by horses, kicks with the foot, blows with the fist, or coming in contact with the corner of a table.

Abdominal injuries in order of frequency are liver, spleen, intestines, mesentery, urinary bladder, kidneys, ureters, blood

vessels, gallbladder, pancreas and pelvic organs. These injuries themselves are separated into 2 large groups:

(1) Injuries of the parenchymatous abdominal viscera, which are represented by the liver, spleen, kidney and pancreas.

(2) Injuries of the hollow abdominal viscera, which include the stomach, the intestines and their mesenteries, the urinary bladder and the gallbladder.

The parenchymatous organs lying as they do in the upper part of the abdomen are more or less protected by their deep position or by the lower ribs and the lumbar spinal column. The usual results of injury to them are marked shock and profuse internal hemorrhage, which is frequently fatal. Of all the abdominal viscera, the liver is the one most commonly ruptured by subcutaneous injuries, or non-penetrating blunt force. Treatment consists in controlling the hemorrhage and repair of the laceration. In some instances control of hemorrhage can be accomplished only by packs or by tamponing with gauze; in others the omentum may be used as a natural tampon. Suture of the friable liver can be accomplished by carefully using blunt needles and large sized suture material. The use of drainage in these cases depends on the amount of uncontrolled oozing and the presence of free bile.

In injuries of the spleen, pre-existing pathologic conditions predispose to rupture. The most common lesions are transverse ruptures of the surface of the hilum, meaning that the hilum is rendered acutely convex in this longitudinal axis. Transverse ruptures of the convex surface are caused by overflexion of the spleen. The spleen is often lacerated by the broken ends of fractured ribs which penetrate the diaphragm, or it may be torn or otherwise crushed by fractured ribs which do not penetrate. Directly localized violence may tear the organ. The treatment of choice is splenectomy, as it gives the only adequate assurance that the laceration itself will no longer bleed. It is quite difficult and at times almost impossible to suture so vascular an organ as the spleen and tamponades or packs are futile and dangerous if there be much laceration and hemorrhage. Drainage in these cases is not essential where the

spleen is extirpated, but should be done if repair is attempted.

Injuries to the kidney vary from simple contusion to actual rupture. Operative treatment should be very conservative in these cases as fatal hemorrhage does not occur unless the renal artery or vein is torn, in which case the patient fails to react from shock and there is an enlarging tumor in the loin. Do not be in too big a hurry to institute operative measures as the kidneys in most conditions will clear up of themselves and will bear the expectant plan of treatment. Immediate primary nephrectomy is seldom indicated. In tears of the kidney simple suture, with or without packing, is all that is required in most instances. Drainage may be used in early operations upon the kidney if there is considerable oozing, and must be used in later operation where sepsis has intervened.

Injuries of the pancreas are serious due to liberation into the abdominal cavity of pancreatic juice. In repairing the laceration of the pancreas, deep sutures through the body will usually hold. Drainage is essential in all cases of pancreatic injury. Operative mortality is from 50% to 75%.

Because of their frequency, injuries of the gastro-intestinal tract play an important role in subcutaneous injuries of the abdomen. Most frequent are injuries of the small intestine, next most frequent are injuries of the large intestine, and least frequent are injuries of the stomach. Ruptures of the intestines usually cause shock of shorter or longer duration. Rigidity in the abdominal wall, which at first is localized, is always present and soon begins to spread, causing peritonitis from bowel content. In serious intestinal injuries operation within six to eight hours from the injury gives the best results. Prolonged evisceration is to be avoided. Warm towels must be freely used to protect the exposed intestines from undue chilling. In locating the lesion we search for lymph exudate, blood, or feces as our guide. It may even be necessary to examine methodically the entire length of intestine. Simple suture of the tear in the gut may suffice if the lesion is small and single. A double inverting suture, reinforced by omentum, makes a satisfactory closure. In other cases where laceration is too extensive or gangrene is

imminent because of interference with the circulation, resection and anastomosis may be necessary. In cases where the condition of the patient will not warrant anastomosis, the damaged loop of gut may be brought out of the abdomen as is done in performing operations for malignant growths. In cases where anastomosis is done, it is sometimes wise to perform an enterostomy above the site of anastomosis, which will serve as a safety valve. The escaped intestinal contents or blood should be carefully removed with a suction apparatus and all foreign material removed. Drainage is usually desirable in all these cases, and an added stab wound with drain placed low in the pelvis, especially if the operative site is high, is often of great value.

Injuries of the stomach by non-penetrating injuries are rather uncommon. Immediate operation is indicated where rupture is suspected. Suture of the laceration should be by double layer of inverting stitches. If the laceration is near the pylorus care must be taken in placing the sutures to avoid narrowing of the lumen which will occur with the healing. Reinforcement of the suture line with a tag of omentum is a useful method of preventing leakage. Gastrectomy in any form is seldom necessary. Drainage in these cases should be instituted if there has been spilled into the abdominal cavity any large amount of gastric contents, but it is not nearly so important as in rupture of the intestines.

Injuries to the urinary bladder rarely demand surgical intervention, except from actual rupture. Where serious injury is suspected immediate operation should be performed. There will be present pain, hemorrhage, shock and lessened passage of urine. The passage of a catheter will often clear up the diagnosis. Any sharp force applied over the suprapubic area is transmitted almost directly to an underlying distended bladder and the rupture may be either intra- or extraperitoneal and is followed by a high mortality rate unless surgically treated. If the rupture is thought to be intraperitoneal, the peritoneum is opened and explored. The laceration is inverted and sutured in two layers, the peritoneum is cleansed, and the abdomen is closed with drainage. If no intraperitoneal rupture is found and there is still suspicion

of a rupture of the bladder, the incision is closed and the bladder is opened extraperitoneally through another incision; if a tear is found in the bladder mucosa, it is repaired from within. In either type of rupture it is always wise to protect the suture line after operation with the use of a retaining catheter.

A full or distended gallbladder may at times be traumatized by severe violence over the liver area, or it may be ruptured by a comparatively slight force which compresses the organ and causes it to burst by hydraulic action. This is especially apt to occur if the wall is diseased, or if a marked grade of cholecystitis is present. Cholecystectomy with drainage is usually resorted to.

Internal prolapse and other pelvic displacements so often claimed to have been the direct result of injury can seldom be substantiated by facts. These conditions were usually present before, or at least a very marked pre-existing weakness was present.

A few brief case reports, touching only the most salient features, are herewith submitted:—

Case 1. A policeman slipped on a banana peel and fell. Immediately he was seized with agonizing epigastric pain. He had the board-like rigidity of upper abdomen, and gave a history of chronic indigestion. A probable diagnosis of ruptured gastric ulcer was made, which was verified at laparotomy three or four hours after the accident. Here, the pre-existing pathology played an important role, and the fall was sufficient to rupture the ulcer. The ulcer was purse-stringed under ether anesthesia, the wound closed without drainage, and an uneventful recovery followed.

Case 2. A boy nine years old was knocked down by an automobile, two wheels passing over his body from left to right. There was absolutely not a mark on the skin to show external violence. The patient was in shock and complained of pain over the left upper abdomen, with rigidity of upper left rectus. Urine showed no blood. Tympany was not present. The white blood cells were increased. As the patient's condition was not materially improved by next morning, a left-sided laparotomy was done under ether and a lacerat-

ed spleen removed. Wound closed without drainage after cleansing abdominal cavity. Patient developed a left pleurisy with effusion, and finally recovered after a stormy convalescence.

Case 3. A farmer was kicked in the abdomen by a mule. Moderate pain and rigidity was present but no distention. X-ray showed no gas under diaphragm to indicate ruptured viscus. The expectant plan of treatment was adopted. Twenty-four hours later pulse had become more rapid, temperature slightly elevated, white blood cells increased and abdomen somewhat tympanitic. Laparotomy under gas-oxygen anesthesia revealed about 12 inches of small intestine stripped from its mesentery, with considerable blood in abdominal cavity. Resection and end-to-end anastomosis was done. Wound closed with cigarette drain. Patient died two days later.

Case 4. A man fell from a ladder striking his left side against a piece of timber. Pain in left lumbar region, with slight shock. Catheterization revealed bloody urine with normal bladder capacity. The left kidney was adjudged ruptured, and treatment for shock was instituted with good results. The kidney was left entirely alone and cleared up in ten to twelve days of rest in bed.

Acute Appendicitis—The symptoms of acute appendicitis are fairly constant, and the sequence in which they occur is of diagnostic importance. In a person otherwise well, acute abdominal pain, severe and colicky in character, is the earliest and most constant symptom. Frequently it is described as a stomach ache felt all over the abdomen. Occasionally it is referred to the epigastrium, rarely to the pelvis or the left side, but most often to the umbilical region. The colicky character soon subsides, and coincidently with this it becomes gradually localized in the right iliac fossa. This usually occurs within the first six to twenty-four hours. The cause of the pain is believed to be due to a swelling and edema of the mucous membrane with an occlusion of the lumen, causing an active peristalsis with a further involvement of the muscular coats. If the pain ceases suddenly without abatement of the accompanying symptoms, one of several changes may have taken place:

1. Perforation of the appendix with a beginning peritonitis.
2. Dislocation of a fecal concretion or other obstruction into the cecum with the consequent emptying of its contents.

3. Gangrene may have developed, especially when the pain ceases less abruptly.

4. With a gradual subsidence of the pain and a corresponding improvement of the other symptoms, recovery will probably occur.

If perforation or gangrene has taken place, a secondary pain develops which denotes a peritoneal involvement. If there are no delimiting adhesions, a rapidly spreading peritonitis occurs, which is indicated by an aggravation of other symptoms and a board-like rigidity of the abdominal muscles, including that of the diaphragm, thus limiting the respiratory movements to the chest.

Nausea and Vomiting.—This is usually considered reflex and occurs within a few hours after the onset of pain. It is rarely absent and seldom persists beyond one or two attacks. If it recurs after the primary subsidence, it denotes a spreading of the infection and may persist until a fatal termination ensues.

Abdominal Tenderness.—Similar to the nausea and vomiting, this is reflex in character. At first superficial and diffuse, with the localization of the pain in the right lower quadrant, the sensitiveness becomes most marked in this area. With the progress of the infection and extension of the process to the serous membranes, rigidity of the overlying muscles develops. The degree of sensitiveness and rigidity varies, not only with the severity of infection and the reaction of the patient to pain, but also depending on the proximity of the appendix to the anterior abdominal wall. Further, the point of greatest tenderness indicates quite accurately the site of the appendix. Whether it be at McBurney's point or remotely situated from the usual area, the reaction is the same. If the tenderness is elicited only on deep pressure, a deeply situated or retrocecal appendix may be suspected.

Fever.—A moderate rise in temperature is a constant and early symptom in acute appendicitis. It follows directly upon the occurrence of pain and tenderness. Its presence or absence is highly significant from a diagnostic standpoint and for an accurate determination it is often advisable to take a rectal reading. It is seldom high and in most instances ranges between 99 and a fraction to 102 or slightly above. In children and in some fulminating forms, the rise is more rapid and not infrequently reaches 103 or more. The degree of elevation depends to some extent on the character of infection, the amount of absorption and the reaction of the patient, but is no index to the extent of involvement, since in many instances of very extensive involvement, the temperature may register only slightly above normal. If, after the initial rise, there is a rapid subsidence, this may denote a beginning gangrene or a perforation with a release of pressure and a temporary cessation of absorption. In either instance a secondary rise occurs as the process advances either to a localized abscess or a general peritonitis. As a rule there is an acceleration of the pulse accompanying the rise in temperature but this has no significance except in advanced cases, where, as part of the picture, it becomes weak, rapid and thready. A fatal termination then usually follows.—*Holcomb*: Minnesota Medicine, July 1932.

THE JOURNAL

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July 1932

THE RELATION OF GASTRIC AND RENAL DISORDERS

Among the papers of interest to the general practitioner read at the recent meeting of the American Medical Association in New Orleans was one by Friedenwald and Morrison¹ entitled "Clinical Observations on the Relation of Gastric and Renal Disorders". It is the general practitioner who first sees the patient with early manifestations of failing kidney function; and in such cases if he recognizes that the anorexia, vague abdominal discomfort, nausea, vomiting and diarrhea, and sometimes obstinate constipation, are due to metabolic changes of renal origin, he can institute treatment that may prevent irreparable damage to the kidneys and myocardium. If he fails to make the correct diagnosis in such case, and treats the symptoms as of primary gastro-intestinal origin, allowing his patient to become dehydrated and toxic from retained urinary products, his trusting patron is doomed to early death from uremia or a damaged myocardium.

In the discussion on Friedenwald and Morrison's paper it was brought out that in any case of nausea and vomiting, with either constipation or diarrhea in a man or woman past fifty, in which such symptoms cannot be accounted for otherwise, it is safest to consider that they are due to renal dysfunction and treat the patient accordingly. The prompt administration of sufficient fluids and soluble carbohydrates in such cases saves lives. If the patient cannot retain water and soluble carbohydrates such as orange juice, lemonade, orangeade, dextrose (cane sugar), glucose (corn syrup) solutions, and coffee or tea, at least three or four quarts of fluids a day, fluids and dextrose may be given by hypodermoclysis (five per cent solution) or intravenously (ten per cent solution). If there is constipation plain water may be given by proctoclysis after a cleansing enema. It is futile, and even harmful to give glucose or other carbohydrates per rectum. (de-Takats², Harris³.) In cases of suspected renal damage salt solutions should be given sparingly, not more than 1000 cc. a day. (Trout⁴.) While sufficient fluids should be given it is unsafe to give more than 4000 cc. a day, because of the danger of "water intoxication", (Roundtree⁵) or of overworking damaged kidneys, or of overwhelming a toxic and failing myocardium.

Of course, it is desirable to make renal function tests (phenolsulphonephthalein), and blood chemistry studies (non-protein nitrogen, urea, creatinin, carbon dioxide combining power of blood plasma, etc.) in such cases to determine the functional capacity of the kidneys and the character and degree of the toxemia; but the general practitioner, who may not have laboratory facilities available, should play safe by treating the patient with gastro-intestinal symptoms of suspected renal origin as if he were positive of the diagnosis of primary kidney disease.

In men past fifty whose first symptoms are anorexia, nausea, vomiting and diarrhea, unless known to be due to food infection or other demonstrable causes, an examination of the prostate, and the bladder for residual urine, may clear up the diagnosis. Not infrequently the first symptoms of urinary obstruction and retention from an enlarged prostate are nausea, vomiting and diarrhea, and the patient may be saved from permanent renal and myocardial damage, and an early death, by recognizing the nature of the disease and administering the appropriate treatment. In such cases operation for the relief of the prostatic obstruction should be deferred until all evidences of uremic symptoms have subsided. The toxic patient with gastro-intestinal manifestations of uremia is a bad risk for any kind of prostatic operation.

Friedenwald and Morrison also discussed renal disease of gastro-intestinal origin, particularly the kidney insufficiency seen in pyloric, or high intestinal, obstruction. They stressed the fact that the toxemia, and alkalosis, that are such dangerous complica-

tions of renal disease of gastro-intestinal origin, particularly the kidney insufficiency seen in pyloric, or high intestinal, obstruction. They stressed the fact that the toxemia, and alkalosis, that are such dangerous complica-

tions in neglected duodenal ulcers with pyloric obstruction and gastrectasis, may be associated with renal insufficiency; and that in such cases, prolonged and thorough preparation of the patient for operation will lower the mortality in gastric surgery. Neither the general practitioner nor the specialist should ever lose sight of the very intimate physiologic relation between the kidneys and the digestive system. S. H.

1. Friedenwald, Julius, and Morrison, Samuel: Clinical observations on the relation of gastric and renal disorders. Read in the Section on Gastro-Enterology of the American Medical Association, New Orleans, May 13, 1932.

2. deTakats, Geza: Push fluids, the surgeon's postoperative order. *Am. J. Surg.* 11:39-44, (January) 1931.

3. Harris, Seale: The futility of glucose enemata. *Jour. M. A. S. A.* 1, 6:260-261 (Dec. 1931).

4. Trout, Hugh: Proctoclysis: An experimental and clinical study. *South. M. J.* 6:791-794, (Dec. 1913).

5. Roundtree, L. G.: Water intoxication. *Arch. Int. Med.* 32: 157-174. (1923.)

DISCRETION IN THE USE OF RABIES VACCINE

One of the inexplicable peculiarities of the human mind is exemplified by the popular reaction to the presence of certain infectious diseases in a community. Some diseases because of their rarity, their loathsome nature, or their supposed fatality are looked upon with utmost dread; others of far greater potential menace to the public health are viewed with an indifference that creates a danger in itself.

Leprosy—a rare, repellent, but not particularly infective disease—is rigidly quarantined in all countries throughout the world. Tuberculosis, infinitely more prevalent, more easily acquired and therefore more dangerous, arouses but casual interest in the average citizen and but little concerted effort is made to segregate persons suffering from its ravages.

At this season of the year another somewhat uncommon disease of an infectious nature makes its annual appeal to the imagination of the people, for it is now that rabies is commonly, though erroneously, believed to be more prevalent than at other periods. Before the onset of "dog days", when hydrophobia is superstitiously supposed to be peculiarly prevalent and particularly virulent, and when the cry, "mad dog", can cause panic in a busy street or throw an entire community into mass hysteria of fear, physicians can render real ser-

vice to their patients and to the health authorities by giving anxious parents the true facts about rabies, thereby preventing the wholesale waste of antirabic vaccine.

Rabies is a terrible disease in that it is invariably fatal in all warm-blooded animals. Any person who has been bitten by an animal proved to be rabid, or who has an open wound contaminated by the saliva from such an animal, should have the benefit of antirabic vaccine at once. Under any other conditions rabies and the rabid animal are as harmless as the fangs of a caged rattlesnake before whose den one stands in awe, but in perfect safety. The comparison may be carried even farther; one may treat a person who has been bitten by a snake or rabid animal and may even handle the snake or animal with perfect safety so long as there is no penetration of the skin by the virus of either.

So true are these facts, so well established by long study and experiment, that the Pasteur Institute in Paris no longer furnishes antirabic treatment for any person unless the suspected animal has definitely been proved to be rabid, and then only if there is a distinct, open wound. The death rate from rabies in this institution is less than $\frac{1}{2}$ of one per cent!

Recently a press dispatch from a community in Alabama stated that *fifty* persons had applied for and would receive antirabic vaccine because they believed that they had been exposed to a neighbor who had died of hydrophobia. The administration of rabies vaccine under such conditions is a waste of material, a useless expense to the State, a needless financial burden on the patients and is not without elements of real danger. In rare instances the vaccine itself causes certain types of paralysis of groups of muscles, usually lasting for weeks and always alarming to the patient and his family. Furthermore, daily injections of a sizable volume of vaccine suspension is not devoid of pain, is sometimes followed by secondary pyogenic infection and is time-consuming.

It is the obvious duty of every physician to learn the true facts regarding rabies, its dangers and the indications for preventive vaccination, and to urge that any person in danger begin treatment at once. On the other hand, the obligation is quite as strong to quiet the fears of the needlessly alarmed, and to discourage the pernicious practice of treating *rabiophobia* with an expensive and potentially dangerous vaccine that has no therapeutic value except as a preventive of *hydrophobia*.
E. M. M.

TRANSACTIONS OF THE ASSOCIATION

TRANSACTIONS OF THE SIXTY-FIFTH CONSECUTIVE ANNUAL SESSION OF THE MEDICAL ASSOCIATION OF THE STATE OF ALABAMA, HELD AT MOBILE, APRIL 19-22, 1932.

First Day—Tuesday, April 19

The Medical Association of the State of Alabama convened in the ballroom of the Battle House and was called to order at 10 A. M. by the President, Dr. Toulmin Gaines.

Invocation was offered by the Rev. Dr. Warren DuBose.

The President introduced Dr. J. H. Dodson, President of the Mobile County Medical Society, who delivered the following address of welcome:

Mr. President and Members of the Association:

Recently a young man who was rapidly becoming bald consulted the President of this organization. The doctor examined the young man's head very carefully and then prescribed the necessary remedy. He said, "Young man, if you will follow this treatment, it will stop your hair from falling." With that the young man looked up at Dr. Gaines' own head and asked, "Why didn't you use your own medicine?" The doctor's reply was this: "When I was a young man and my hair began to fall, there was no Dr. Gaines."

As a representative of the Mobile County Medical Society, I wish to extend you a most cordial welcome. We, like you, have been in the midst of a great business and financial depression but I have been informed by the Chairman of the Entertainment Committee that neither depression nor deprivation has ever weakened the spirit of Mobile.

We are glad to have you here and wish for you a most pleasant and profitable meeting.

The Senior Vice-President, Dr. G. F. Littlepage, presented the President, who read his message.* The message was referred to the Board of Censors.

REPORTS OF OFFICERS

President Gaines asked for the report of the Senior Vice-President which, after presentation, was referred to the Board of Censors. The report follows:

*Report of Senior Vice-President Littlepage**Mr. President and Members of the Association:*

In compliance with a resolution adopted by the Association at its meeting in April 1931, I held two

*The President's Message appeared in the June issue of the Journal.

divisional meetings during the past year. The attendance at both was exceptionally good and the papers presented were of excellent character.

At the Florence meeting, held on August 13, 1931, Dr. Carl Grote of Huntsville presented a paper on the diagnosis and treatment of tuberculosis of the kidney; Dr. J. R. Garber of Birmingham, maternal exhaustion; Dr. Cecil Gaston of Birmingham, diagnosis and treatment of malignant diseases of the colon and rectum; Dr. Joe Beard of Vanderbilt University, production and treatment of traumatic shock; and Dr. Duncan Dixon of Talladega, gas bacillus infection in civil practice.

The second meeting was held in Tuscaloosa, January 21, 1932. Early diagnosis of tuberculosis in children, the problem of the arthritis patient, the diagnosis of upper abdominal conditions, suggestions to general practitioners on treatment of diseases of the skin, and nutrition in relation to dental health were discussed respectively by Drs. Chas. Abbott, Tuscaloosa; J. P. Chapman, Birmingham; A. C. Jackson, Jasper; Toulmin Gaines, Mobile; and Ralph McBurney, Tuscaloosa.

I want to take this opportunity to express my personal appreciation for the loyal support which I have received and which made possible the success of these meetings.

Dr. G. W. Williamson, Hartford, Vice-President of the Southeastern Division, submitted the following report which was referred by the President to the Board of Censors.

*Report of Vice-President Williamson**Mr. President and Members of the Association:*

Two meetings were held in my division during the year. The first, at Geneva on August 11, was addressed by Drs. Brannon Hubbard, Montgomery, on what anesthetic?; Frank Wilson, Birmingham, solitary diverticulitis of the cecum; V. J. Gragg, Clanton, extra-uterine pregnancy; William Hannah, Montgomery, diagnosis and treatment of heart failure; and J. N. Baker, State Health Officer. In the early afternoon a fish fry was given on Lake Geneva.

The second meeting was on October 6 at Clanton. Dr. W. W. Harper discussed the diagnosis of acute abdominal conditions in infancy; Dr. C. R. Bennett presented a case of pernicious anemia; Dr. M. Y. Dabney contributed a paper on trichomonas vaginalis vaginitis; and Dr. J. Harold Watkins discussed the diagnosis and treatment of bronchiectasis. At 1 P. M. a barbecue was served by the Chilton County Medical Society, host to the division.

Dr. K. A. Mayer, Vice-President of the Southwestern Division, rendered the following report which was referred to the Board.

Report of Vice-President Mayer

Mr. President and Members of the Association:
Having visited most of the counties in my division, I find that harmony and good-will prevail among the doctors; further, that there seems to be a very determined effort that Alabama shall continue to set the pace for the world toward the final triumph of preventive medicine.

Some counties because of financial stress have contemplated discontinuing all-time health service. My efforts, which have been greatly aided by the good doctors in these counties, have been rewarded by a continuation of this great work.

A number of clinics have been held in the division, and many children have been relieved of diseased tonsils, enlarged adenoids, and other offending conditions. This service was donated by interested physicians and surgeons to whom we are very grateful.

Two divisional meetings have been held: One in Monroeville, with our distinguished President and other prominent physicians contributing instructive papers; and the other in Demopolis. After the business sessions luncheon was served, that in Demopolis being a barbecue prepared under the direction of Dr. W. T. Cocke.

President Gaines asked for the report from the Northeastern Division and it was submitted as follows by Dr. W. M. Salter, Vice-President, Anniston.

Report of Vice-President W. M. Salter

Mr. President and Members of the Association:
Since the last meeting of the Association, I have visited seven counties in my division. I have written letters to every county, urging each to have regular monthly meetings. Further, I have urged the societies to secure the membership of eligible non-members.

The following is the report of the counties, giving the number of meetings and scientific papers read from April 1931 to April 1932:

County	Scientific	
	Meetings	Papers
Calhoun	13	26
Clay	1	*
Chambers	7	16
Cleburne	2	*
Coosa	2	*
Blount	12	4
DeKalb	4	4
Etowah	20	16
Jackson	3	*
Marshall	11	6
Madison	12	7
Randolph	3	3
Talladega	12	19
Tallapoosa	6	10
Shelby	9	6
St. Clair	4	6
Cherokee	†	†

*None. †No report.

The 117 scientific papers read at 120 meetings of county societies have been of high type and instructive to the membership.

Two meetings were held of the doctors in the division. The first, at Guntersville on September 9, 1931, was attended by 63. Dr. I. P. Levi read a paper on new causes of fracture of the patella; Dr. Jerre Watson discussed some of the problems facing the doctors of Alabama; Dr. Cecil Gaston dealt with colon and rectal malignancies; and Dr. W. C. Dixon of Nashville presented an analysis of 318 cases of fibroid tumor of the uterus.

At the second meeting, held at Sylacauga January 19, 1932 with 69 present, Dr. J. D. Durden reported a case of agranulocytosis, Dr. R. C. Young discussed dentistry in relation to obstetrics, Dr. Toulmin Gaines reviewed radicalism in the State organization, and Dr. M. Y. Dabney described a reliable laboratory test for pregnancy.

The Secretary presented the following report which President Gaines referred to the Board.

Report of the Secretary

The membership of the Association as enrolled April 1, 1932 is 1,593, a decrease of 77 in the number recorded in my last annual report to you. The decrease is due in part to the loss to the State of a number of physicians who have cast their lot with sister states. There are 2,025 physicians in Alabama according to the records of my office, 73 less than a year ago.

It is a matter of keen regret to all that an unconquerable fate directed the removal from the Book of the Living of the names of Drs. T. P. DeWeese, A. L. Harlan and J. M. Watkins. Drs. Harlan and Watkins, counsellors of many years and members of the State Board of Censors died on January 4 and 25, respectively. By constitutional authority the President of the Association appointed Dr. Groce Harrison to fill temporarily the vacancy created on the Board by the death of Dr. Harlan, and Dr. M. O. Grace likewise to fill the vacancy created by the death of Dr. Watkins.

At the last meeting of this body, Drs. Sibley Holmes and E. L. Kelly of the Second Congressional District were elected counsellors. They have duly qualified as counsellors and at the proper time these names should be added to the Roll of Active Counsellors.

The following officers of the Association are to be elected at this meeting: A president, a vice-president for the Northwestern Division; two members of the State Board of Censors for five years, the terms of Drs. Partlow and Watkins (the latter of whom is deceased but whose term would have expired with that of Dr. Partlow at this meeting), and a third member of the State Board of Censors for three years, to complete the unexpired term of Dr. A. L. Harlan, deceased. The following known vacancies will occur in the College of Counsellors: three to succeed W. M. Cunningham, J. D. Heacock and J. P. Turner, who are to be elevated to Life Counsellors; two to fill the vacancies caused by the death of Drs. J. M. Watkins and J. W. Robert-

son; and two to fill the vacancies created by the resignation of R. H. Hamrick and L. R. Wright. The twelve counsellors listed below have served their first term of seven years as counsellors, and according to constitutional provision, it becomes the duty of this body either to re-elect these counsellors or to fill any vacancies created: E. V. Caldwell, G. A. Cryer, W. E. Howell, Brannon Hubbard, A. A. Jackson, J. W. Jordan, P. M. Lightfoot, J. M. Mason, S. H. Newman, R. A. Smith, W. R. Taylor and G. W. Williamson.

As delegates to the American Medical Association President Gaines appointed Drs. R. S. Hill and J. N. Baker and named Drs. W. W. Harper and L. W. Roe as their respective alternates. They will serve during the 1932 and 1933 sessions of the national body.

In the places of those whose terms of service on the various committees of the Association expired with the 1931 meeting, the President appointed the following to serve five years:

Mental Hygiene.....	G. G. Woodruff
Prevention of Blindness.....	A. M. Walker
To Meet Druggists.....	M. O. Grace
Hospitals.....	W. J. Callaway

Dr. J. D. Perdue was appointed to fill the unexpired term of Dr. W. W. Perdue (deceased) on the Committee on Prevention of Blindness. When Dr. Clyde Brooks changed his place of residence to Louisiana, the President appointed Dr. N. G. James to succeed him on the Committee to Meet Druggists.

Those whose terms of service on the Committees of the Association expire with this meeting are:

Mental Hygiene.....	W. S. Littlejohn
Prevention of Blindness.....	W. G. Thigpen
To Meet Druggists.....	W. S. Rountree
Hospitals.....	G. F. Littlepage

It will be the prerogative of the incoming president to fill these vacancies and to appoint a delegate to the American Medical Association to succeed Dr. Seale Harris (alternate—W. W. Harper) whose term will end with the 1932 meeting of that body.

Respectfully submitted,
Douglas L. Cannon, Secretary.

The Treasurer of the Association, Dr. J. U. Ray, rendered his report as follows:

Report of the Treasurer

FINANCIAL STATEMENT
GENERAL ACCOUNT

Receipts

Cash brought forward from last report*	\$ 6,260.17
Dues from 99 counsellors (Exhibit A)	990.00
Dues collected from 67 county societies (Exhibit B)	4,380.00
Dues collected from 66 counties, delegate fees (Exhibit C)	556.00

*See page 70, July 1931 Journal.

Interest on daily balances	162.92
Cash for roster sold	1.00

Disbursements

Salary, Dr. D. L. Cannon, Secretary	\$ 600.00
Salary, Dr. J. U. Ray, Treasurer	300.00
Jefferson Producing Co., Rent for Theatre	100.00
Brown Printing Co., 1,700 Registers	352.00
Brown Ptg. Co., Stationery	49.49
St. Louis Button Co., Badges	29.90
Postage and Miscellaneous	251.42
Merc. Pa. Co., File for Sec'y	23.25
M. L. Jennings Ins. Co., Premium on Bond	8.00
Dues 1,558 members to Journal	3,116.00

	\$12,350.09	\$ 4,830.06
Balance cash on hand		7,520.03
	\$12,350.09	\$12,350.09

Recapitulation

Cash on hand	\$ 6,260.17	
Total receipts for year	6,089.92	12,350.09
Less total disbursements for year		4,830.06
Balance cash on hand		\$ 7,520.03

Exhibit A

Counsellors and Counsellors-Elect Remitting Dues

Acker, P. J. M.	Hagood, M. H.
Alison, S. B.	Hamrick, R. H.
Ashcraft, V. L.	Hatchett, W. C.
Bailey, E. B.	Hayes, C. P.
Bedsale, J. G.	Hayes, J. P.
Brothers, T. J.	Heacock, J. D.
Broughton, L. E.	Heflin, H. T.
Burdshaw, S. L.	Hendrick, W. B.
Caldwell, E. V.	Hill, R. L.
Cannon, D. L.	Hollis, J. S.
Cardon, S. G.	Holmes, Sibley*
Chandler, J. C.	Hough, J. S.
Chenault, F. L.	Howell, W. E.
Crutcher, J. S.	Hubbard, T. B.
Cryer, G. A.	Hutchinson, W. H.
Cunningham, W. M.	Jackson, A. A.
Dabney, M. Y.	James, A. D.
Doughty, M. E.	James, N. G.
Dowling, J. D.	Kelly, E. L.*
Dupree, M. W.	Leach, Sydney
Faulk, W. M.	Lester, B. S.
Gordon, S. A.	Lightfoot, P. M.
Grace, M. O.	Long, Clarence
Gragg, V. J.	Lull, Cabot
Granger, F. G.	Lupton, F. A.
Greer, W. H.	Martin, J. C.
Gresham, G. L.	Mason, E. M.

*Counsellors-elect.

Mason, J. M.	Searcy, G. H.	Limestone	33.00
Mayer, K. A.	Searcy, H. B.	Lowndes	15.00
McAdory, E. D.	Shropshire, C. W.	Macon	30.00
McCall, D. T.	Sledge, E. S.	Madison	96.00
McLester, J. S.	Smith, R. A.	Marengo	45.00
Miles, W. C.	Speir, P. V.	Marion	33.00
Miller, W. T.	Tankersley, Jas.	Marshall	36.00
Morris, W. E.	Taylor, W. R.	Mobile	240.00
Moxley, J. B.	Thomas, E. M.	Monroe	39.00
Newman, S. H.	Tucker, J. S.	Montgomery	216.00
Noel, W. E.	Turner, J. P.	Morgan	78.00
Noland, Lloyd	Waldrop, R. W.	Perry	24.00
Nolen, J. A. M.	Walker, A. A.	Pickens	42.00
Oates, W. H.	Walls, J. J.	Pike	57.00
Oswalt, G. G.	Ward, H. S.	Randolph	33.00
Price, A. B.	Watkins, J. M.	Russell	6.00
Ralls, A. W.	White, A. L.	Shelby	48.00
Redden, R. H.	Whitman, C. R.	St. Clair	27.00
Robertson, J. W.	Wilkerson, F. W.	Sumter	36.00
Rountree, W. S.	Williams, M. J.	Talladega	66.00
Rucker, E. W.	Williamson, G. W.	Tallapoosa	39.00
Sankey, H. J.	Wright, L. R.	Tuscaloosa	120.00
Scott, W. F.		Walker	117.00
		Washington	18.00
		Wilcox	36.00
		Winston	30.00

Exhibit B

County Society Dues Collected at 1931 Meeting

Autauga	\$ 12.00
Baldwin	42.00
Barbour	36.00
Bibb	33.00
Blount	36.00
Bullock	27.00
Butler	39.00
Calhoun	111.00
Chambers	48.00
Cherokee	9.00
Chilton	24.00
Choctaw	30.00
Clarke	24.00
Clay	21.00
Cleburne	6.00
Coffee	48.00
Colbert	48.00
Conecuh	21.00
Coosa	12.00
Covington	60.00
Crenshaw	33.00
Cullman	45.00
Dale	33.00
Dallas	108.00
DeKalb	48.00
Elmore	45.00
Escambia	48.00
Etowah	135.00
Fayette	21.00
Franklin	48.00
Geneva	42.00
Greene	12.00
Hale	24.00
Henry	30.00
Houston	84.00
Jackson	45.00
Jefferson	1,143.00
Lamar	33.00
Lauderdale	72.00
Lawrence	30.00
Lee	54.00

Exhibit C

Delegate Dues Collected at 1931 Meeting*

Autauga	\$ 8.00
Baldwin	8.00
Barbour	8.00
Bibb	8.00
Blount	8.00
Bullock	8.00
Butler	8.00
Calhoun	8.00
Chambers	8.00
Cherokee	8.00
Chilton	8.00
Choctaw	8.00
Clarke	8.00
Cleburne	4.00
Coffee	8.00
Colbert	8.00
Conecuh	8.00
Coosa	8.00
Covington	8.00
Crenshaw	8.00
Cullman	8.00
Dale	8.00
Dallas	12.00
DeKalb	8.00
Elmore	8.00
Escambia	8.00
Etowah	8.00
Fayette	8.00
Franklin	8.00
Geneva	8.00
Greene	4.00
Hale	8.00
Henry	8.00
Houston	8.00
Jackson	8.00

*Clay did not remit dues for delegates; Cleburne and Greene remitted for one.

Jefferson	28.00
Lamar	8.00
Lauderdale	8.00
Lawrence	8.00
Lee	8.00
Limestone	8.00
Lowndes	8.00
Macon	8.00
Madison	8.00
Marengo	8.00
Marion	8.00
Marshall	8.00
Mobile	12.00
Monroe	8.00
Montgomery	16.00
Morgan	8.00
Perry	8.00
Pickens	8.00
Pike	8.00
Randolph	8.00
Russell	8.00
Shelby	8.00
St. Clair	8.00
Sumter	8.00
Talladega	8.00
Tallapoosa	8.00
Tuscaloosa	8.00
Walker	8.00
Washington	8.00
Wilcox	8.00
Winston	8.00

JOURNAL ACCOUNT

July 1, 1931—February 29, 1932

RECEIPTS

Association Subscriptions of:			
1,558 members		\$3,116.00	
Advertising			
July	\$226.57		
August	237.79		
September	194.86		
October	266.49		
November	173.73		
December	235.63		
January	239.98		
February	243.86	1,818.91	
Miscellaneous			
Refund, Co-operative			
Med. Adv. Bur.	111.35		
Non-member subscrip-			
tions (8)	24.00		
Transaction Sales (3)	3.00		
Journal Sales (6)	1.50	139.85	5,074.76

DISBURSEMENTS

July Journal—Printing			
and Distribution	414.21		
August	430.46		
September	421.04		
October	475.66		
November	433.96		
December	399.16		
January	365.91		
February	329.22	3,269.62	
Stencils for mailing list	50.20		
Standing matter for bound			
vols.	86.00		
Printing 2 M receipts for			
subscriptions	12.00		
Printing 2 M receipts for			
dues	12.00		
3-line rubber stamp	1.10		
Postage	69.38		
Birmingham Court Report-			
ing Co., 1931 Meeting	213.30	413.98	3,713.60
Balance Cash on Hand			1,361.16
		5,074.76	5,074.76

RECAPITULATION

Receipts	5,074.76	
Disbursements		3,713.60
Balance cash on hand		1,361.16
	5,074.76	5,074.76

REPORTS OF COMMITTEES

Report of the Committee of Publication

Fred Wilkerson, Chairman

In keeping with the wishes of the Association regarding the establishment of a state journal, as expressed at the last annual meeting, the State Board of Censors, through its journal committee, instituted publication of such a journal in July 1931 under contract with the Brown Printing Company, of Montgomery.

Realizing that reputable advertising would contribute materially to the financial upkeep of the Journal, the Committee of Publication established contact with national advertisers through the Co-operative Medical Advertising Bureau of the American Medical Association. Such affiliation has proved a good business venture inasmuch as, despite present economic conditions, net receipts from advertising during the period July-February averaged \$227.35 per month. With the portion of membership dues allotted for subscription to the Journal added, it appears that the first year of publication will be brought to a close without a deficit. A detailed statement of the finances attending the operation of the Journal have constituted a part of the Treasurer's report.

Ten issues (July-April) of the Journal have reached your desks. In these numbers have appeared 53 scientific articles, 27 editorials, the transactions of the 1931 meeting of the Association, contributions to the Association Forum, Department of Health articles and news items from county medical societies. A continuation of the co-operation which has made these things possible should assure the success of the publication, now that the experimental stage is passed.

Reference should be made, in closing, to the bound copies of the entire volume which will be made available to those desiring them at a cost of \$1.00 per copy. In the July and August numbers of the Journal notice to this effect was published, the secretary requesting that members wishing a copy to so express themselves. Despite these notices only eighteen members have placed orders. However, the printers have held in reserve 300 copies of the monthly numbers to be found, stripped of advertising, soon after July 1 for those desiring a permanent copy. It is important, therefore, that you make known your desires in the immediate future.

Committee on Mental Hygiene

W. S. Littlejohn, Chairman

Your Committee on Mental Hygiene begs to submit the following report:

Members of this committee attended the meeting of the Alabama Mental Hygiene Society, which met in connection with the Alabama Educational Association in Birmingham, March 18. At that meeting several committees of the Mental Hygiene Society made reports. One of these reports was on Mental Hygiene in the Work and Training of Physicians.

The consensus of opinion at that meeting was that the primary requirement at the present time in Alabama is for one or more mental hygiene clin-

ics to which cases may be referred for observation, classification and subsequent suggestions for adjustment. The chief interest, and field for best results, in mental hygiene will probably always be with the children and young adults. The term mental hygiene in itself infers prophylaxis and treatment of early aberrations. Theoretically, by the proper use and intelligent development of our knowledge of neuropsychiatry and psychology we should be able to reduce the population of the insane hospitals and penal institutions. While we will probably never be able to attain this ideal, yet to begin or even approach this state we must quicken the interest of all branches of the medical profession and educate them to recognize behavior problems, maladjustments, psychoneuroses and psychoses, whether functional or organic, in the earliest stages.

The average physician is interested in the physiologic processes and the integrity of the organ systems. However, more and more they are beginning to appreciate that personality and environment are important in contributing to illness.

The Alabama Insane Hospitals are giving clinics in psychology and sociology to the State University, Birmingham-Southern, Howard, State College for Women at Montevallo, and the University Summer School. These hospitals are also doing a remarkable piece of work in the segregation and sterilization of mental defectives. This work, however, is for the student of psychology rather than the medical student and physician.

We hope to contact during the next year each local, county and district medical society in the State in an attempt to arouse interest in mental hygiene. We also hope that the physicians of the State will realize that this committee will furnish information to those interested in mental hygiene, suggestions for literature on mental hygiene and program suggestions for this subject for their societies. We also hope to be able to arrange with the official and non-official medical journals, scientific journals and educational journals of the State to give items on mental hygiene and its importance.

Alabama is one of the few states in the Southeast that has no mental hygiene clinic other than that furnished by the State Insane Hospitals.

Committee on First Aid

J. D. Heacock, Chairman

Mr. President and Members of the Association:

First aid work in Alabama has gone on apace.

The report of last year as compared with former years was quite flattering but the report of this year (1932) caps the climax, and we have the very gratifying exhibit of an unprecedented showing in this particular field—especially in and around industrial institutions.

Of course it is understood that along with first aid work all modern hygienic precautions are put in vogue which automatically make the incidence and acute illness less frequent.

Furthermore, our State has been wonderfully blessed in being spared the usual number of mine disasters—this, too, can be ascribed to scientific and well directed hygienic measures.

The first aid movement has received its best vindication and utility value by the magnificent work rendered on the occasion of our late storm disaster. The prompt and machine-like service rendered at the instance of this disastrous calamity can but be attributed to the discipline and training on the part of the first aid movement.

As to the functioning of the coal mines and industries, the appended statement from the Alabama Mining Institute tells a marvelous story.

It is a source of gratification also to note that some of the public schools of the State have made it a part of their curricula to teach in a scientific and engaging way the art and craft of first aid.

In Birmingham this is done in co-operation with the Safety Council and was heartily endorsed by the Alabama Educational Association at its last annual meeting.

All in all the first aid movement in Alabama connotes satisfactory and lasting progress.

“Alabama ranked high among the coal-producing States of the Union in 1930 in the prevention of accidents conducted by the Bureau of Mines. The Bureau’s study, which was based upon uniform reports from operating companies in all States, showed that among 25 coal producing states, Alabama ranked eighth (8th) in the prevention of fatal accidents and fourth (4th) in the prevention of non-fatal injuries during that year. The favorable record of the State was due mainly to the intensive safety campaigns that have been conducted by the mining companies in Alabama and by the State Mine Inspector and his associates, all of whom have been co-operating closely with the United States Bureau of Mines.

The accident rate for Alabama was 25 per cent better than the country’s general average as regards fatal injuries and 46 per cent better as regards lost-time injuries.

Alabama’s fatality rate was 1.54 per million man-hours of employment in the coal mines as compared with a rate of 2.06 for the United States as a whole. The Alabama rate for non-fatal injuries was 55 per million hours as against an average of 104 for the whole country.”

Alabama Employees Trained in First Aid

Number of Operations		Year	Year	Year
		1929	1930	1931
34	Coal mines with 100% training	406	5,321	2,472
2	Ore mines with 100% training		656	
9	Industrial plants connected with coal and iron industry	37	976	2,126
45	Total with 100% training	443	6,953	4,598
	In coal mines, ore mines, industrial and cement plants with only part of employees trained	1,476	3,748	4,928
	Total trained	1,919	10,701	9,526*

(*) Includes 6,860 Renewed Training.

The above report does not include approximately 1,250 employees of the Alabama Power Company and Southern Bell Telephone & Telegraph Company, trained by company experts, not eligible for U. S. Bureau of Mines Certificates, as they can only be presented to employees of the mining and allied industries.

Miscellaneous Business

Dr. A. C. Parker of Gulfport, Mississippi, fraternal delegate from the Mississippi State Medical Association, was presented and extended the courtesies of the floor.

A similar courtesy was extended Dr. T. B. Sellers, fraternal delegate from the Louisiana State Medical Society.

The following telegram was received and read:

The Florida State Medical Association extends to you greetings in sixty-fifth annual session. We feel that your many years of development and good accomplished augurs well for the future. Best wishes.

Dr. G. H. Edwards, Pres.

Drs. Pierpont and Simpson of the Florida Association were introduced and accorded the courtesies of the floor.

The following telegram was received and read:

On account of the death of my brother and his funeral at Cedartown, Georgia, on Thursday, I cannot be present to read my paper. Regards to Cary. Regret I cannot see him. Best wishes for a successful meeting.

Seale Harris.

The following resolution, introduced by the Secretary at the request of Dr. J. R. Garber, was referred to the Board:

A Resolution

WHEREAS, The Southern Medical Association accepted the invitation of the Jefferson County Medical Society to hold its next annual meeting in Birmingham, Alabama, November 16 to 18, 1932, and

WHEREAS, The convention of this scientific body will redound to the credit of the medical profession of Alabama and prove of incalculable value to its membership, and

WHEREAS, The distinguished body of men comprising the Southern Medical Association depends upon the hosts for a successful and profitable convention, and

WHEREAS, The Jefferson County Medical Society is assuming the responsibilities incidental to the entertaining of the said Southern Medical Association; therefore be it

Resolved, That the Medical Association of the State of Alabama joins heartily with the Jefferson County Medical Society in welcoming the members

of the Southern Medical Association to Birmingham and Alabama; and be it further

Resolved, That the members of the Medical Association of the State of Alabama recognize the great benefits and pleasures that will accrue from the said convention of the Southern Medical Association and extend their felicitations and full and hearty co-operation to the Jefferson County Medical Society.

At noon adjournment was taken until 2:30 P. M.

Afternoon Session, Tuesday, April 20
2:30 O'clock

Scientific Program

Dr. C. P. Gay, Geneva, presented a paper entitled The Acute Abdomen as Encountered by the Country Doctor. It was discussed by Drs. M. E. Smith, America; W. W. Harper, Selma; J. O. Rush, Mobile, and E. V. Caldwell, Huntsville.

Dr. J. Otis Lisenby, Atmore, read a paper on the Increasing Mortality from Appendicitis which was discussed by Drs. W. R. Meeker, Mobile; J. Mac Bell, Mobile; R. S. Hill, Montgomery; Alton Ochsner, New Orleans; J. S. Turberville, Century, Florida; and Sidney Meeker, Memphis.

The third paper of the afternoon was Peptic Ulcer from the General Practitioners' Standpoint by Dr. W. R. Carter, Repton. It was discussed by Drs. G. C. Kilpatrick, Mobile; G. O. Segrest, Mobile; and Fred Wilkerson, Montgomery.

Dr. O. L. Chason, Montgomery, presented a paper on The Status of Diphtheria Immunity in a Typical Alabama County which was discussed by Dr. A. M. Shelamer, Union Springs.

Dr. A. H. Graham's paper on Recent Advances in the Prophylaxis of Diphtheria was read by title and ordered published in the Journal.

The afternoon's scientific program was concluded by Dr. Burr Ferguson, Birmingham, who discussed the use of intramuscular injections of hydrochloric acid in various disease states.

Miscellaneous Business

On motion of Dr. W. M. Salter, the Association instructed the Secretary to send a telegram of sympathy to Dr. Seale Harris on account of the death of his brother.

Whereupon at 5:30 P. M. an adjournment was taken until 8 P. M.

Evening Session, Tuesday, April 21
8:00 O'clock

Scientific Program

Dr. G. Heustis Fonde of Mobile presented a paper on The Clinical Aspects of Allergic Hay-Fever and Asthma, which was discussed by Dr. Marion Davidson of Birmingham.

Dr. P. W. Auston's paper on Tuberculin Testing was read by title and ordered published.

Phrenirexis is the Treatment of Tuberculosis was the title of the paper presented by Dr. N. R. Clarke of Mobile. The paper was discussed by Drs. E. S. Sledge and R. V. Taylor of Mobile.

Dr. John E. Walker, Opelika, read a paper on Bacteriophage, which was discussed by Drs. Burr Ferguson, Birmingham, and W. W. Harper, Selma.

A paper by Dr. A. C. Jackson of Jasper on An Anomalous Case of Hernia was read by title and ordered published in the Journal.

Miscellaneous Business

The Secretary introduced by request of Dr. C. L. Guice the following resolution which was referred to the Board:

A Resolution

WHEREAS, The Treasurer's report shows a balance to the credit of our Association of about seven thousand dollars, and

WHEREAS, The bound volumes of the Journal can be published for one dollar, and

WHEREAS, There are approximately fifteen hundred members of the Association; therefore be it

Resolved, That each member of the Association be furnished a bound volume of the Journal free of charge.

Whereupon at 10:15 P. M. an adjournment was taken until 9:00 A. M., Wednesday.

Second Day—Wednesday, April 20

The session was called to order at 9:00 A. M., by President Gaines, whereupon, under miscellaneous business, Dr. J. P. Stewart of Attalla introduced the following resolution which was referred to the Board:

A Resolution

WHEREAS, Inequalities and injustices in the appointment of the Counsellors of the Medical Association of the State of Alabama have gradually developed until three counties have a preponderance, or at least the balance of power, in the voting strength of the Association, thus enabling them to dominate the policies and name the officers of the Association, and

WHEREAS, These three counties have more Counsellors than there are in forty-five other counties in the State, thus discriminating against the rural counties, and

WHEREAS, As evidence of this discrimination against the smaller counties, these three counties now have six members of the Board of Censors, thus having a majority on this Board, while sixty-four counties have four members, and

WHEREAS, In no other State Medical Association in the United States does one Congressional District have more Counsellors than another, so that in other states the cities cannot control the State Association; thus, the County of Fulton (Atlanta, Ga.) has nine votes (1 counsellor and 8 delegates) in the Georgia State Medical Association, while one of these Alabama counties has thirty-three votes in the Alabama State Medical Association; therefore be it

Resolved, That Article VI, Section 7, of the Constitution of the Medical Association of the State of Alabama, where it reads "The total number of active Counsellors and Counsellors-elect, at only one time, shall not exceed 100" be changed so as to read "The total number of active Counsellors and Counsellors-elect at any one time shall not exceed 180"; and be it further

Resolved, That Section 10 of the same article (VI) be changed to read as follows: "The nominees must be so distributed among the Congressional Districts of this State as to make the number of Counsellors from each district twenty, due and proper regard being had to the qualifications for the position of Counsellor prescribed in the preceding section."

Dr. R. S. Hill, Montgomery, introduced the following resolution which was referred to the Board:

A Resolution

WHEREAS, There is an increasing interest being manifested in the subject of State Medicine, and

WHEREAS, State Medicine makes hirelings of medical men, destroys their independence and ambition and ultimately results in low grade and inefficient doctors to whom the masses of the people must look for medical care, and

WHEREAS, The services of low grade medical men are inimical to the best interest of the people; therefore be it

Resolved, That this Association, the legal State Board of Health of Alabama, go on record as uncompromisingly opposed to State Medicine; and be it further

Resolved, That articles by Dr. E. W. Ochsner of Chicago, appearing in other medical journals, exposing the fallacies and laying bare the evils of State Medicine, be published in the Journal of the Association; and be it further

Resolved, That other like articles be solicited for publication in the Journal.

Scientific Program

Dr. S. D. Suggs, Montgomery, described A New Instrument for the Treatment of Endometrial Conditions.

Dr. Alton Ochsner, New Orleans, read a paper on The Diagnosis and Treatment of Acute Intestinal Obstruction.

Dr. Jesse H. York, Atlanta, presented a paper on Observations in Spinal Anesthesia.

The Jerome Cochran Lecture was delivered by Dr. A. Benson Cannon of New York City.

Discussion of the first three papers of the morning was participated in as follows: Dr. Felix Tankersley, Montgomery, discussed Dr. Suggs' paper; Dr. S. R. Benedict, Birmingham, and Dr. Jerre Watson, Anniston, discussed Dr. York's paper.

Dr. Sidney Meeker, Memphis, read a paper on Obstetric Analgesia, which was discussed by Drs. W. H. Blake, Jr., Sheffield, and F. A. Lupton, Birmingham.

Dr. T. B. Sellers, New Orleans, presented a paper on Gynecologic Office Treatment, which was discussed by Drs. J. M. Weldon, Mobile; Gilbert Douglas, Birmingham; Brannon Hubbard, Montgomery, and A. L. Stabler, Birmingham.

Dr. L. L. Hill, Jr., Montgomery, read a paper on Aberrant Endometrium, which was discussed by Drs. M. Y. Dabney, Birmingham; H. B. Dowling, Mobile; J. A. Lanford, New Orleans, and Gilbert Douglas, Birmingham.

Miscellaneous Business

The President-elect of the American Medical Association, Dr. Edward H. Cary of Dallas, Texas, was presented to the Association by President Gaines.

The Secretary announced the vacancies in the College of Counsellors and designated a time and place of meeting of commit-

tees constitutionally appointed to fill the vacancies.

Dr. Gordon Chason, fraternal delegate from the Georgia Association, was introduced and accorded the privileges of the floor.

Whereupon at 2:20 P. M. an adjournment was taken until 8:00 P. M. of the same day.

Evening Session, Wednesday, April 20

Public Meeting

The session was called to order at 8:00 P. M. by the President who introduced Dr. L. J. Moorman of Oklahoma City, the President of the Southern Medical Association. Dr. Moorman acknowledged the introduction briefly and fittingly.

Dr. J. N. Baker, State Health Officer, addressed the meeting using as his subject Mobile's Gifts to Medicine and Public Health.

Dr. Jerre Watson, Anniston, was presented next and read a paper on Our State Association.

As the last speaker of the evening, the President introduced Dr. Edward H. Cary, President-elect of the American Medical Association. At the conclusion of the address the Association adjourned until 9:00 A. M. Thursday.

Third Day—Thursday, April 21

The Association was called to order at 9 A. M. Whereupon the Secretary, by request, introduced the following preamble and resolution:

Preamble

Dr. Aaron LaFayette Harlan was born at Hackneyville, Tallapoosa County, Alabama on October 12, 1861 and died at Alexander City, Alabama, January 4, 1932.

For forty-five years he practiced medicine in East Alabama, achieving a high degree of success. He was a fine type of the beloved family physician—courteous, modest, kind and thoroughly competent—serving high and low, rich and poor, with like faithfulness and untiring energy.

He was a student as well as a practitioner of medicine and always kept abreast of the times in the rapid expansion of medical knowledge during the last quarter of a century. He was an untiring and never failing friend to his professional brothers and to the organized medical profession of Alabama.

High honors came to him both in and out of the profession, all of which he wore with becoming dignity and modesty. He was at different times President and Secretary of the Tallapoosa County

Medical Society, County Health Officer, President of the Chattahoochee Valley Medical Association, President of the Association of Alabama Power Company Surgeons, President of the Medical Association of the State of Alabama, and at the time of his death a member of the State Board of Censors and State Senator from the tenth senatorial district. He filled all these places with marked ability reflecting credit both upon himself and the office to which he was called to serve.

His was a well rounded, full and fruitful life. He has passed from the walks of men and we shall not soon look upon his like again; therefore be it

Resolution

Resolved, That the Medical Association of the State of Alabama cherish the memory of the splendid life of Dr. A. L. Harlan, that it reflect with pride upon his professional loyalty, and that it commend his example to men everywhere and especially to the members of the profession he loved so well as one worthy of emulation; and be it further

Resolved, That these resolutions be given a place in the minutes of the proceedings of this Association and a copy sent by the Secretary to the family of the deceased.

The resolution was referred to the Board.

Scientific Program

Dr. Irwin P. Levi, Anniston, read a paper on The Newer Concept of the Etiology of Cancer which was discussed by Dr. R. V. Taylor, Mobile, and Drs. A. L. Glaze and Burr Ferguson, Birmingham.

Dr. Seale Harris' paper on Hyperinsulinism as One of the Causes of Epilepsy was read by title and ordered published in the Journal.

Dr. Percy W. Toombs, Memphis, read a paper entitled Progress Towards Ideal Obstetrics. It was discussed by Drs. J. R. Garber and Burr Ferguson, Birmingham; Dr. J. M. Weldon, Mobile, and by Dr. L. J. Moorman, Oklahoma City.

Dr. Jacques Baumhauer, Mobile, presented a paper on Allergy in Children with Particular Reference to Food Idiosyncrasies.

Dr. K. B. Williams, Hartford, read a paper on The Importance of Postnatal Case.

A joint discussion of the papers of Drs. Baumhauer and Williams was participated in by Drs. W. M. Salter, Henry Green and Marion Davidson.

The Association adjourned until 1:00 P. M.

Afternoon Session, Thursday, April 21
1:00 O'clock

Scientific Program

Dr. Henry Boswell of Sanatorium, Mississippi, discussed The State Control of Tuberculosis.

Dr. Curtice Rosser of Dallas, Texas, presented a paper on Differential Diagnosis of Rectal Malignancies.

Dr. L. J. Moorman read a paper entitled Pulmonary Tuberculosis and Its Therapeutic Problems.

Dr. Fred H. Albee, New York City, discussed Bacteriophage in the Treatment of Osteomyelitis and Other Wounds.

Dr. Chas. Bloom of New Orleans gave a resume of Recent Studies in Rickets.

Whereupon the Association resolved itself into sections for the completion of the afternoon's program and to reconvene at 8:00 P. M.

Evening Session, Thursday, April 21

The Association was called to order at 8:00 P. M. by Vice-President Littlepage.

Dr. C. P. Hayes, Elba, read a paper on Brill's Disease: Sporadic Typhus, which was discussed by Drs. W. A. Lewis, Enterprise, and Henry Green, Dothan.

The next paper, Typhoid Carriers: Observations of Their Distribution, was presented by Dr. L. C. Havens, Montgomery. The paper was discussed by Dr. W. E. Wilson, Montgomery.

Dr. Adrian Taylor discussed the Surgical Treatment of Neuralgias.

Dr. Merle E. Smith, America, read a paper on Treatment of Hookworm. The paper was discussed by Drs. W. H. Abernethy, Troy, and W. C. Hatchett, Huntsville.

Dr. S. R. Benedict, Birmingham, discussed Physiologic and Pathologic Death.

At 9:55 P. M. an adjournment was taken until 9:00 A. M. Friday.

Fourth Day—Friday, April 22

The Association, sitting as the Board of Health of the State of Alabama, was called to order at 9:00 A. M. by President Gaines.

The list of registered counsellors and delegates entitled to vote was read by the Secretary and approved by the body.

The report of the Board of Censors was rendered by the Chairman of the Board, Dr. W. D. Partlow of Tuscaloosa.

THE FIFTY-NINTH ANNUAL REPORT OF
THE STATE BOARD OF CENSORS, INCLUDING
ITS REPORT AS THE BOARD OF MEDICAL
EXAMINERS AND AS THE COMMITTEE OF
PUBLIC HEALTH.

W. D. PARTLOW, M.D., Chairman

Part I

The Board of Censors begs to submit this, its
Fifty-ninth Annual Report:

Foreword

In 1875 by a special act of the General Assembly of Alabama this Association was constituted the State Board of Health and clothed by it with the necessary authority to put into effect the health laws of the State. In 1879, likewise by a special act of this same body, this Association was entrusted with the grave responsibility of regulating and enforcing the Medical Practice Act of the State. How faithfully, how efficiently, how sacrificially, this Association has discharged these trusts from its people, it prefers to have the record speak for itself. The Board, however, feels amply justified in voicing the view that, with the march of years and because of the rapid and tremendous strides made in public health through scientific discovery, the confidence and faith of our people remain more unshaken than ever in our leadership for this particular and difficult task. This confidence is gratifyingly reflected in the attitude alike of the Governor, the various departments of State and through the public press. The inherent structure of our machinery, which permits of an automatic divorcement from a general political atmosphere, makes a strong appeal to all, and the Board desires to express its commendation to our present State Health Officer for his efforts to preserve such non-political relationship.

A due appreciation of this disinterested spirit on our part was everywhere apparent in the Legislature of 1931. The assaults made upon the high standards of the existing Medical Practice Act, by certain groups or cults—Christian Scientists and chiropractors—seeking special legislative concessions, received but small consideration at the hands of this Legislature. Almost without exception all matters even remotely bearing upon the public health were first submitted to the health department with but the single thought of strengthening and broadening the scope of usefulness of this important arm of the State's government. The Board feels that the importance both to public health and to organized medicine of the close interplay and relationship now existing between these two agencies cannot be too forcefully nor too frequently stressed, and contributes in large measure to our outstanding successes in the field of public health. The sentiment pervading this legislature even in the face of a marked falling off in the State's revenues was everywhere expressed in an unwillingness to hamper the activities of the health department.

This fact, however, must be borne in mind: Because of a decided curtailment in the State's finances, the Governor will likely be forced to call

the Legislature into extraordinary session. Between now and such time as this is done every member of this Association should interest himself in pointing out to his own senator and representatives the vital need now more than ever before of public health work for the masses of our people, whose productivity, physical efficiency and health play such an important part in the financial and economic life of our State.

ECONOMIES IN ADMINISTRATION

During this period of unparalleled and worldwide financial embarrassment from which no governmental agency, no industry, no agricultural pursuit, nor any individual has escaped, the Board has felt that a careful review of the expenditures and activities of the health department should be made in conjunction with the State Health Officer, its administrative head. With this end in view, the Board at its July meeting selected three of its members to investigate the financial affairs of the department and to report at its next meeting in October. At this meeting two reports were submitted, received and referred to the State Health Officer, upon the adoption of the following motion:

"In order to clear the records it is moved that the majority and minority reports of the committee be received with thanks to this committee; and that they be given further consideration by the State Health Officer, who is asked to report, in which report shall be included the recommendations of the Health Officer to this Board how best, within the spirit of these reports, he can materially reduce the expenditures of this department."

At the January meeting a carefully studied and detailed report was submitted by the State Health Officer and unanimously adopted by the Board, in which was set forth certain policies of retrenchment and economies which he felt might be practiced without seriously crippling the manifold activities of the department. In this connection, the Board should like to emphasize the fact that, in the consideration of contemplated economies, the feeling was unanimous that the State funds now allocated to county health units should not only not be reduced, but, in certain instances be actually augmented, if necessary to preserve their activities. This matter will be dealt with more at length by the State Health Officer in his report, presently to be submitted.

THE HEALTH DEPARTMENT IN EMERGENCIES

Of the ten stricken counties in the wake of the recent cyclonic disaster, eight of them had all-time health units which furnished the nucleus around which the relief workers could rally. The splendid work done by the volunteer doctors and nurses in every area—many of them working the long night through—served as a beautiful illustration of how nobly these professions respond in such emergencies. The greatest amount of damage, both in loss of life and in injured, as well as in property destruction, was apparently done in Tuscaloosa, Chilton, Jackson, Shelby and Cullman Counties.

In emergencies, such as the one through which we are now passing, the organized health unit in those counties possessing such units—and 54 of Alabama's 67 counties do possess them—immediately and logically becomes the first line of defense as well as the pivotal point around which the various volunteer relief agencies may quickly rally. The American Red Cross is the one national agency set up in every state and in every county of the state to finance and permanently pilot these stricken areas to complete rehabilitation. It is to meet just such catastrophies as the present one that all citizens, rich and poor alike, unstintingly donate to this great international organization which had its birth on the bloody battlefields of Europe. But it takes several days for the machinery of this far-flung organization to begin to function smoothly, and it is in the first hours and days of emergencies that a well organized health department can be of the greatest service. The storm had scarcely abated before the health forces throughout the State were in the field, working side by side with the surgeons and nurses to give every possible aid to the wounded. Having made this contribution to meet the emergencies on the human side, the organized health forces silently slip into the background, leaving the completion of the strictly medical rehabilitation to the various volunteer agencies headed by the medical profession and the Red Cross. In the wake of all such disasters disease and contagion are quite likely to follow, unless every precaution of sanitation and immunization is rigidly applied and it is upon this phase of the problem that the health forces of the State must concentrate.

It is with pleasure that the Board reports that in every devastated area, regardless of the presence or absence of an organized health unit, our central health department is bending every effort to aid in the physical restoration of the sanitary surroundings of the stricken areas.

The President's Message

The President's Message was eloquently and forcefully delivered to this Association as an outstanding literary production and a distinct credit, not only to him as a man of ability and culture, but also to this Association to be recorded among its archives. It indicates at once that he has industriously and vigorously gone into a study of the organization with the purpose of presenting his views thereon in the form of an interesting and forceful communication. His message includes certain specific recommendations with his comments thereon which vitally concern the welfare of this Association and the conduct of public health work in Alabama.

FIRST RECOMMENDATION

The first recommendation submitted by the President for the consideration of this Association is one dealing with the present title of the Journal. This title now reads, for purposes of clarity and definition, "The Journal of the Medical Association of the State of Alabama and of the State Board of Health". In the selection of this title, an effort was made, also, to simplify the finances involved

in its publication. The recommendation adopted by this Association provided that should a deficit occur, such deficit should be taken care of on a pro rata basis shared in by the scientific body and the Department of Public Health; the moneys of the one coming from the dues of the members, the moneys of the other coming from appropriations made for public health work by the State. However, as pointed out by the President, this Association is, by law, the State Board of Health, and for this reason the single title, "The Journal of the Medical Association of the State of Alabama" would seem to be quite sufficient. The Board, therefore, concurs in this recommendation of the President.

On motion duly seconded the Association approved the recommendation of the Board.

SECOND RECOMMENDATION

The second recommendation, providing for an editor-in-chief for the Journal, also has the approval of the Board. The Board, therefore, recommends that the Chairman of the Committee of Publication, to which it has entrusted the details of publication of the Journal, serve as editor-in-chief, and that the other members of this committee be the associate editors.

On motion duly seconded the Association approved the recommendation of the Board.

THIRD RECOMMENDATION

The President next deals with the formation of sections within the Association, as arranged for last year by the action taken by this body. After detailing the efforts made by him to get each one of these sections on a working basis, he makes the following recommendation:

"That in the future each section shall be permitted to elect its own officers, arrange its own programs, merge with other sections by mutual agreement, have its own plan of organization, and in every way be self governing except that it should hold its scientific session concurrently with other sections at such time as appointed by the Association".

The Board has given serious thought to this question of the formation of sections within the Association and has also watched with interest how this experiment introduced last year would work out in a practical way. It is the sense of this Board that our meetings will be of greater interest, and the scientific purposes of this Association, in so far as all of its membership is concerned, will be better served if all scientific papers are presented before the general assembly. It, therefore, recommends that sectional meetings, as well as any other gatherings which might interfere with the regular conduct of the scientific program, be discontinued, and that for all deliberations the entire membership meet in one assembly. The Board, therefore, does not concur in this recommendation, but does recommend a discontinuance

of all section meetings, until a larger membership of our Association would seem to justify a sectional division.

On motion duly seconded the Association approved the recommendation of the Board.

FOURTH RECOMMENDATION

The next recommendation made by the President is that the time for holding the election of officers for this Association be made the first order of business at the afternoon session of the first day of meeting, that is, on Tuesday; setting forth as his principal reason that such a change might obviate some of the political campaigning during our annual sessions and in the halls of the Association.

The Board discussed quite at length this suggestion, many arguments both pro and con being presented. A majority opinion finally prevailed that the change might be made somewhat as an experiment. In order to bring about such a change Section 4 of the ordinance, now in force, and which reads as follows:

"That the last day of the session shall be devoted to the transaction of the business of the Association, the report of the Board of Censors, the revision of the rolls and the election of officers"

will have to be altered by the striking out of the following words, "*and the election of officers*", and add to this ordinance the following section:

"That the election of officers for the Association shall be made the first order of business of the afternoon session held on Tuesday, the first day of the annual meeting of the Association".

In order to comply with the recommendation of the President in this particular, the Board recommends the adoption of this change in the ordinance now governing the order of business and the election of officers of the Association.

Dr. C. A. Mohr moved that the recommendation be not concurred in, which motion was seconded and the question discussed as follows:

Dr. M. Y. Dabney: Mr. President, it is to be regretted that often but a handful of members are on the floor of the general assembly when the Association is being addressed by a distinguished guest from out of the State. Yesterday I do not believe there were more than forty people who heard the leading bone surgeon in this country, Dr. Albee of New York. Instead small groups were congregated up and down the corridors talking politics. One of the main functions of this body is to meet as a scientific assembly for the presentation and discussion of scientific subjects. Any proposal that would enable us

to discharge this function should be adopted. When the recommendation was considered by the Board there was not unanimity but as it did not involve an amendment to the Constitution the members of the Board agreed that the plan should be tried for a while. If found unsatisfactory, the original plan could be reverted to.

President Gaines relinquished the chair to Vice-President Littlepage and made the following statement: When Dr. Moorman, President of the Southern Medical Association, arrived Wednesday morning, knowing we had opened our session Tuesday, asked, "Did you elect your officers yesterday"? I think that is very significant. (President Gaines resumed the chair.)

On a call for the question and a request for a division, 101 voted "aye"—51 voted "no".

This recommendation of the Board was therefore not concurred in.

FIFTH RECOMMENDATION

The fifth recommendation made by the President deals with the advisability of making selections to fill the vacancies occurring on the State Board of Censors from each congressional district, and having one such counsellor elected from the State at large to serve on the State Board of Censors. His recommendation reads as follows:

"I recommend that the State Board of Censors should be so selected as to consist of one counsellor from each district and one representing the State at large".

This recommendation received serious consideration, and because of a tie vote the Board does not concur in this recommendation of the President.

It was moved and seconded that the recommendation of the Board be concurred in, whereupon the question was declared open for discussion.

Dr. R. S. Hill: The Board does not make a recommendation. It is for the Association to say—

Chairman Partlow: When the recommendation of the President received the attention of the Board, a motion to concur was made and seconded. The result was a tie vote, the motion failing to carry. Therefore, the report of the Board on this recommendation of the President is: "This recommendation received serious consideration and because of a tie vote, the Board does not concur in this recommendation of the President".

Dr. R. S. Hill: I make the point, Mr. President, that the Board neither concurred in it nor rejected it. Now, it would seem to be in order for the chair to put the question whether the President's recommendation shall stand.

Chairman Partlow: My position is this: A motion to concur in the recommendation of the President was lost before the Board of Censors because of a tie vote.

Dr. R. S. Hill: That is true, but there wasn't any motion to reject the recommendation of the President.

A voice: Mr. President, I rise to a point of order. Since there was a tie vote, I move that the matter be not considered in either light.

President Gaines: There is a motion before the house that the recommendation of the Board of Censors be concurred in.

Dr. C. A. Mohr: Mr. President, the question is: Is there anything before the house on this particular matter?

Dr. R. S. Hill: May I suggest that Dr. Mohr change his motion to one that the Association not concur in the recommendation of the President? That will clarify the matter; we simply want to do it right.

Dr. C. A. Mohr: Will that accomplish the end in a parliamentary way?

Dr. R. S. Hill: Yes, it will.

Dr. C. A. Mohr: Then I withdraw my original motion and move that the recommendation of the President, bearing on the election of members of the Board of Censors by congressional districts, be not concurred in.

The motion was seconded, the question called for and on the vote was carried by the "ayes".

This recommendation of the President was therefore not concurred in.

SIXTH RECOMMENDATION

The sixth recommendation by the President suggests that the present method of selecting delegates to the State Association, which now provides that county medical societies may either elect or have their presidents appoint such delegates, be changed so that all delegates be elected by their county medical societies.

The Board feels that the present plan of leaving the decision in the selection of delegates to the county medical societies is a wise one, more particularly as it applies to the small counties, inasmuch as the question of representation in this body depends frequently upon what member or members will be able to attend, rather than upon whom shall

be selected to attend as delegates. In other words, more counties are likely to be represented in the House of Delegates if the present method prevails than if the presidents were denied the privilege of making appointments. For these reasons the Board does not concur in this recommendation.

On motion duly seconded the Association approved the recommendation of the Board.

SEVENTH RECOMMENDATION

The seventh recommendation of the President is to the effect that inasmuch as the present method of appointment and the terms of service of members appointed on various standing committees and councils of the Association are not uniform, proper steps be taken to accomplish this end.

The Board concurs in this recommendation and recommends that the ordinance submitted below, governing the organization of standing committees, be substituted for the one now in force:

Be it ordained by the Medical Association of the State of Alabama,

(1) That whenever, in the judgment of the Association, it seems desirable to establish any standing committee or council in order to promote the working interest of this body, it shall become the duty of the State Board of Censors to recommend the name of such committee to be created, together with the number of members to serve on such committee or council; and further, that the provisions of this ordinance shall apply to those committees and councils now existing in the Association.

(2) That the members selected to serve on standing committees or councils shall be appointed by the President and that the first named member of such committee or council shall serve as the chairman thereof; and further, that the terms of service of the committeemen, unless otherwise specifically provided, shall be for five years.

(3) That as vacancies occur these shall be filled by the President and announced to the appointees by the Secretary within one month of the adjournment of the annual meeting of the Association.

(4) That all such committees or councils shall submit annual reports to this body of work done and progress made, and the Secretary of the Association shall keep a roster of each of said committees and councils in conformity with the provisions of this ordinance.

(5) That it shall be the duty of the chairmen of said committees or councils to give the President such information and reasonable assistance as he may request in the conduct of the business of the Association.

(6) That the chairman of each committee, or council, shall, if necessary, be supplied with the necessary stationery and postage for the proper conduct of his office; said expenses not to exceed five dollars (\$5.00).

(7) That no provision of this ordinance shall apply to the appointment or organization of temporary committees or councils.

On motion duly seconded the Association adopted the ordinance recommended by the Board.

In closing his message, the President takes occasion to commend the excellent type of service being rendered the people of this State through our County Health Officers and Units, quoting from a number of these expressions and opinions having a direct bearing on the relationship which should exist between health workers and practicing physicians.

Reports of Vice-Presidents

The Board rejoices that it can again commend the excellent type of work done this year by our four Vice-Presidents. It will be recalled that, last year, this Association, upon the recommendation of the Board, reduced the number of meetings to be held by these officers from four to two. Each of these officers has held the required number of meetings for his district and their reports in every instance indicate real progress and a livelier interest both in the scientific and public health activities of our County Medical Societies. The Board, therefore, recommends the approval of these reports.

On motion duly seconded the Association approved the recommendation of the Board.

Report of the Secretary

As usual, the report of the Secretary is complete and concise, and entitled to your approval. The Board desires, on this occasion, to express to the Association its appreciation of the capable and efficient manner in which this officer has handled the many details incident to our new venture in the publication of the Journal. The Board feels that it is because of his efforts that so many advertisements of a high and ethical type were procured and which have served to materially reduce the cost of publication to this Association.

On motion duly seconded the Association approved the sentiment expressed by the Board.

Report of the Treasurer

The report of the Treasurer, like that of the Secretary, is orderly and complete and is entitled to the approval of this Association.

The auditing committee has also carefully checked the books of this officer and found them to be correct.

On motion duly seconded the Association approved the recommendation of the Board.

Report of the Committee of Publication

The report of this committee, submitted by its Chairman, Dr. Wilkerson, has been found complete and orderly, and is, therefore, entitled to the approval of this Association.

On motion duly seconded the Association approved the recommendation of the Board.

The State Journal

The Association will recall that at our last annual session, the Journal Committee, selected from this Board, submitted a full and exhaustive report, recommending the publishing of a monthly journal by this Association; this report was unanimously adopted.

In the report, the Board was clothed with authority to take the necessary steps looking to this end. Immediately thereafter your Journal Committee, composed of Drs. F. W. Wilkerson, W. W. Harper, J. S. McLester, the State Health Officer, and the Association's Secretary, went earnestly to work and in July of last year—less than two months after your endorsement of the plan—the first issue of the Journal came to you. Thus, by this action, came true the dreams and aspirations harbored by this Association since 1885 when first recommended by President Riggs, of Selma, forty-seven years ago. The Board while claiming for itself but a small modicum of the glory of this achievement feels that, in all fairness, it and this Association must give the most credit where credit is due; viz., to the Committee of Publication, which is now a continuation of the Journal Committee. Each succeeding issue, with its splendid scientific contributions, its dignified and timely editorials and its broad compass of public health activities for which we are responsible, proves more convincingly than ever the wisdom of such action.

With the appearance of the Journal, it now becomes necessary to so modify the existing ordinance pertaining to the Committee of Publication, as to properly care for the publication of the Journal.

The Board, therefore, asks the endorsement by the Association of the following ordinance, which, after its adoption, will supplant the one now in force governing the Committee of Publication:

(1) That the Journal and the Transactions of the Medical Association be published under the direction of the State Board of Censors.

(2) That a Committee of Publication shall consist of three members of the State Board of Censors to be chosen by the Board, the Secretary of the State Board of Censors and the Secretary of the Medical Association of the State of Alabama.

(3) That it shall be the duty of this committee to make all contracts for the printing and distribution of the Journal and annual volume of Transactions, and to supervise and to edit said publications, with authority to admit in full or in part or to exclude such papers, reports and discussions as it may deem proper.

(4) That the terms of service of the Committee personnel shall be at the pleasure of this Board.

(5) That in the annual volume of transactions shall be included the complete report of the annual proceedings of this Association and a roster of its members; and that sufficient number of bound volumes of transactions shall be printed

to furnish each member a copy, the provisions of this section of this ordinance to take effect at the expiration of the first Journal year, June 1932, and that the cost of such publication is not to exceed \$1,500.00.

(6) That this ordinance, when adopted by the Medical Association of the State of Alabama, shall supplant the one now governing the Committee of Publication.

On motion duly seconded the ordinance was adopted.

Reports of Councils and Standing Committees

Of the eight standing committees and councils now existing in the Association, only two have submitted reports through their chairmen. The Board feels that with a little more effort and enthusiasm manifested by these various committees much worth-while work might be done and many matters of importance and interest to the physicians of this State stimulated. With this thought in mind, the Board desires to commend those chairmen who have submitted reports and also to urge the other committees to have reports and suggestions to be submitted at the next annual meeting of this body.

On motion duly seconded the Association concurred in the expression of the Board.

Report of the Auditing Committee

The Auditing Committee, composed of Dr. S. A. Gordon and Dr. F. W. Wilkerson, reported to this Board that the financial statement for the fiscal year, 1930-1931, submitted by the State Health Officer of the expenditures by the State Board of Health has been carefully examined and found correct. The Board, therefore, recommends the approval of this report by the Association.

On motion duly seconded the Association approved the recommendation of the Board.

Resolutions on the Death of Dr. Harlan

(See page 36)

The Board not only takes pleasure in recommending the unanimous adoption of these resolutions but would also like to add that the same fine sentiment expressed therein be made equally applicable to our late member, Dr. J. M. Watkins, a former member of this Board, who within three weeks of the death of Dr. Harlan also passed to the Great Beyond.

On motion duly seconded the recommendation of the Board carried unanimously.

Resolutions on the Death of Dr. J. M. Watkins

WHEREAS, Dr. J. M. Watkins was called suddenly from his earthly labors on January 25, 1932; and

WHEREAS, Dr. Watkins had been a member of this Association for a number of years and had

served loyally and faithfully on the State Board of Censors for two years, and had discharged these duties in a commendable fashion; therefore be it

Resolved, That in the death of Dr. Watkins the Board has lost a valuable member, the profession a conscientious doctor and the State a splendid citizen; and be it further

Resolved, That a copy of these resolutions be spread upon the minutes of this Board, a copy sent to the family and a copy published in the Journal.

On motion duly seconded the resolution was unanimously adopted.

Resolution of Dr. J. R. Garber

(See page 34)

The resolution prepared by Dr. J. R. Garber and introduced by the Secretary of the Association has the hearty endorsement of the Board, and it recommends its approval by this body.

On motion duly seconded the Association adopted the recommendation of the Board.

Resolution of Dr. J. P. Stewart

(See page 35)

Inasmuch as this resolution seeks to amend the Constitution, it will have to lie over for a period of one year, and the Board so recommends.

On motion, duly seconded, the Association adopted the recommendation of the Board.

Resolution of Dr. R. S. Hill

(See page 35)

While this resolution is divided into three parts, for the purposes of consideration by this Association, parts two and three can readily be grouped. The first part of this recommendation states:

"That this Association, the legal State Board of Health for Alabama, go on record as uncompromisingly opposed to State Medicine".

The Board unhesitatingly endorses this portion of Dr. Hill's resolution.

Parts two and three read as follows:

"That articles of Dr. E. W. Ochsner, appearing in other medical journals exposing the fallacies and laying bare the evils of State Medicine, be published in the Journal of the Association, and that other like articles be solicited for publication in the Journal".

In regard to parts two and three of this resolution, the Board decided, after considerable discussion of the matter, that an abstract, as complete as possible, be made of these articles, and that such abstract appear in the Journal.

On motion duly seconded the Association adopted the recommendation of the Board.

Resolution of Dr. Guice

(See page 35)

The Board debated quite at length the subject matter embraced in this resolution and, before reaching a final decision, obtained official counsel of the Secretary and Treasurer of this Association.

Realizing the value to all of our members of having in bound form, ready for easy filing and reference, the official proceedings and roster of members of this Association, the Board recommends for adoption by this Association the addition of the following section to the ordinance governing the Committee of Publication:

(5) That in the annual volume of transactions shall be included the complete report of the annual proceedings of this Association and a roster of its members; and that a sufficient number of bound volumes of transactions shall be printed to furnish each member a copy; the provisions of this section of the ordinance to take effect at the expiration of the first Journal year, June 1932, and that the cost of such publication is not to exceed \$1,500.00.

On motion duly seconded the Association adopted the recommendation of the Board.

Resolution by Dr. Watson

At the last meeting of this Association a resolution seeking to amend the Constitution was introduced by Dr. Jerre Watson, which reads as follows:

Resolved, That Article XIII, Section 6 of the Constitution of the Medical Association of the State of Alabama, which now reads: "The Board shall elect from the College of Counsellors by not less than a majority vote of its members an executive officer to be known as the State Health Officer, and shall submit the name of the officer so selected to the Association (the State Board of Health), in annual session, for confirmation", shall be amended by the addition of the following sentence: *The State Health Officer shall not be permitted to hold office as a member of the State Board of Censors.*

According to the Constitution of this Association this amendment had to lie over for one year. The Board does not recommend now the adoption of the amendment to the Constitution, but in lieu of the proposed amendment, it offers the ordinance given below.

The Board is thoroughly in accord with the principle expressed in this communication, but sees no need of a constitutional amendment for an idea which merely reiterates an axiom in practice in all governmental bodies, namely, that no one may hold two elective offices at the same time. Since the Constitution of the State of Alabama makes our organization a part of the governmental body, your Board wishes to offer this ordinance as a substitute: The ordinance is as follows:

No member of the State Board of Censors shall be permitted to hold any other elective office in this Association other than that of Counsellor.

It was moved and duly seconded that the ordinance be adopted.

Dr. C. A. Mohr offered a substitute motion that the recommendation be not adopted.

The question being called for, a *viva voce* vote indicated that a majority favored the substitute motion. A division being requested, a further vote was taken, whereupon President Gaines announced that 105 voted "aye" and 27 "no".

Therefore the recommendation of the Board was not adopted.

At this juncture, Dr. Jerre Watson of Anniston, speaking to the question of personal privilege, addressed the Association as follows:

Dr. Jerre Watson: Gentlemen, I have no desire to harass you with an address. I bow with submission to the strategy of the gentleman who made the motion as a substitute, and although the proposition was railroaded through, which was evident to all of you present, I still bow in submission to it.

I feel, as a matter of personal privilege, gentlemen, that I have the right to explain to you, inasmuch as some criticism has been directed towards me for the submission of this amendment—I feel that you have a right to know why this submission was made, and the purposes that were in my heart when the proposed amendment was submitted.

At Birmingham last year it was contained in the President's Message as a recommendation that the State Health Officer should not be a member of the State Board of Censors. This was concurred in by the State Board of Censors after its submission.

The sentiment of the people with whom I talked, the doctors of this Association, was such as to lead me to feel it was almost the unanimous sentiment of those who gathered in Birmingham that such a movement would be for the advantage of this Association.

In view of these facts, I submitted the amendment to our Constitution, which has just been acted upon. I wish you to know, gentlemen, in view of the criticism that has been unexpectedly directed at me because of this, that there was no animosity in my heart towards any man in this Asso-

ciation nor towards our present State Health Officer, who has already been apprised of that fact through private correspondence; there was no purpose to inhibit or prohibit any member of this Association from enjoying all the privileges which should rightfully belong to him.

This amendment was submitted by me simply for this purpose: That I am a citizen of the State of Alabama, not simply by birth, but by heritage, having been a member of the State of Alabama through my forebears for generations. I wish you to know further that there is no radicalism in my make-up. I am a descendant of slave-holding people of the South, and have inherited the ideals of Southern democracy and of American principles by virtue of my forebears and my environment. I want you to know furthermore I hold the ideals of democracy, as I understand them, as a matter of principle and not simply as a matter of environment and heritage. This amendment was submitted for the purpose of carrying out what I understand to be democratic ideals.

In the first place, our State Health Officer, at this time is not, nor at that time was he a member of the State Board of Censors. It was, therefore, my sentiment that an amendment to the Constitution could very appropriately be submitted at that time without being offensive to anyone.

So far as our present Health Officer is concerned, he has my unqualified approval, endorsement and co-operation, but as a matter of democracy of government, it was my sentiment that when the time was appropriate, without being offensive to anyone, it was the opportune moment to separate our executive and our legislative bodies. It was this sentiment that I wanted to put over to this organization that our executive officer should not sit in a body that acted as an employing agent for himself; that, in the second place, he should not sit in a body that reviewed his own acts; that, in the third place, he should not act in an advisory capacity to himself; and, in the fourth place, by virtue of the fact that our State Health Officers in the past have remained such throughout life, or throughout their physical ability to serve as State Health Officer, that the chairmanship, which has automatically in the past

reverted to the State Health Officer, would give to the State Health Officer, whoever he might be, too great power. Consequently, this amendment was submitted for the good of the organization and for the good of the public; submitted for the purpose of making more general the influence of our Association; submitted for the purpose of making it more deserving of public support; submitted for the purpose of making our State Health Officer—not our present one, but whoever may come in the future—amenable to the governing body of this Association.

Now, why did I wish that? I wished it for this reason: Not that I have anything to gain by it. There are men in this organization who are younger than I and whose years of service, in the natural course of events, will be of greater duration than my own, but I have three sons coming on, and one of them, and your sons, may be members of the Medical Association of the State of Alabama in the future. Gentlemen, this amendment was submitted without criticism, without animus, without any desire to militate against the good of any member of this organization, but for the good of those boys of mine coming on in the future, for the good of your boys coming on in the future, and for the good of the organization as a whole.

I felt it was proper that I should arise at this time and let you know my true sentiments in this matter, let you know it was done from the depth of my heart and for the good of the organization. Apparently, gentlemen, you differ from me, and again I say I bow in submission to your will.

Dr. J. N. Baker, State Health Officer, also speaking to the question of personal privilege, made the following remarks:

Dr. J. N. Baker: Some present may feel that it is a display of unwonted temerity on the part of the State Health Officer to presume to discuss a matter which has such direct bearing on him personally. To his mind, this is purely incidental and of minor importance in comparison with the primary and major purposes which this unique machine was designed to serve. Therefore, with an utter disregard for the personal equation, he, as your official executive, should like to direct attention to

some of the fundamental and basic things incorporated into this organization, and with the deliberate intent of making it an efficient agency through which to prosecute the public health activities of this State.

This Association—The Medical Association of the State of Alabama—is by law the State Board of Health. It is charged, not only with the protection and promotion of the health of the entire citizenry of the State—now numbering two and two-thirds million people—but it is likewise charged with the annual expenditure of one million two hundred thousand dollars of the people's money now being invested by them in public health. Surely, this is no light responsibility; and yet this responsibility is yours; and, for more than a half century, you have met it courageously, unflinchingly, efficiently. And how?

Written deep into the organic law of this Association is the important proviso that it shall choose one of its own seasoned members from a selected group—the College of Counsellors—to discharge this important duty to the people. The success or failure of our efforts in this regard will always depend upon two factors:

(1) The quality of service rendered by your executive, the State Health Officer.

(2) The extent and character of the support given him by the officers and the rank and file of this Association.

Eliminating the present incumbent, the truly remarkable sequence in selection—Cochran, Sanders, Welch—is a glowing tribute to your penetrating sagacity in the choice of men; and even the present incumbent, after his period of testing, and through zeal, loyalty and devotion to the high ideals of this Association, although he does not aspire to a place beside these immortals, does hope to merit your confidence and respect. Therefore, in his efforts to serve you and through you the people of this State, is it unreasonable that he should hope for and expect, not only your unstinted support and aid in all affairs pertaining to the public health, but also your undivided efforts in the defense and preservation of the machinery of this organization. which, during the past fifty-seven years, has won for you and your State the admiration and wonder of the world? So long as this Association continues to

hold this important trust from the people, these essential factors woven into our organization must be preserved. If the time has now come when the membership of this body is no longer willing to have these essential things preserved, then I say that the time has also come when there should be a complete divorcement of the scientific and public health features of this Association and that the people should be given back this important charge committed to our trust. It is my deliberate opinion that this Association has reached the parting of the ways. If it purposes to continue to assume responsibility for health activities and for the Medical Practice Act in this State, then it must preserve the vital things breathed into it by its creator. It cannot be made, it must not be made, the political play-toy of any individual or of any group.

Standing as I now do in the watch-tower, I glimpse the spectre of several ugly monsters stalking amongst our people.

One of these is tuberculosis, mowing down to death more than two thousand souls annually, and claiming today in living, crippled victims, some twenty thousand. What shall we do about this? It is our responsibility.

Another spectre I see: It is a long line of weary women treking along a steep incline, all unaware of the explosive dangers lurking at the top. These are mothers-to-be, holding the citizenry of tomorrow locked in their wombs. A glance at official records reveals the disquieting fact that, in Alabama, these receive less prenatal care and furnish the highest death rate from puerperal albuminuria and convulsions of any of fifteen states studied. What are we doing about this? It is our responsibility.

And still another spectre presents: The venereal diseases are tremendous factors in the swelling of the numbers to be found in our State institutions, to say nothing of the untold ravages wrought in private life. To make a visible impress on this problem will require the best talent of the medical profession, the health and the social worker combined. What are we doing about this? A large portion of this, at least, is our responsibility.

And there are other spectres—not so urgent, perhaps; yet of sufficient importance

to command the best thought and talent of this splendid group. The enviable record and phenomenal achievements of our health system are directly traceable to the labors, the zeal and the devotion of organized medicine in the field of public health. From the pioneer days of 1875 on down to now, you have never flinched. The medical profession is, today, enjoying the fruits of these labors in a singularly gratifying manner. Our citizens, restless and chafing under unusual financial burdens, are manifesting anxiety concerning many governmental agencies; our legislature and our Governor, distraught and hard pressed in their efforts to balance the State's budget are encountering almost insuperable difficulties. And yet, through it all, scarce a murmur of complaint can be heard against your health department. It still stands deep-rooted in the affections and the confidence of our people, our Governor and our legislature. This is your reward for a duty faithfully and conscientiously performed, made possible only through a unity and unison of effort on the part of the entire membership of this Association.

And now, bearing in mind what has just been said, permit me to state, quite briefly, further reasons why I opposed the proposed ordinance:

The ordinance was both superfluous and needless, because the present State Health Officer is not now a member of this Board.

Nowhere in our Constitution or in any ordinance is it written that the State Health Officer either *must*, or *must not*, be a member of the State Board of Censors. In the wording of our organic law the essence of democratic principles is beautifully preserved, by leaving the decision of this matter to the voting strength of this Association where it rightfully belongs. This ordinance sought to rob the members of this legislative body of this important right. You are now experimenting with the practical feasibility of not having the State Health Officer a member of this Board. By all means, continue the experiment so long as you see fit; but never permit it to be written into the ordinances or the Constitution of this Association that the services of any Counsellor, be he State Health Officer or any other, *cannot* be made available to this Association, should it, in its wisdom, so

decide. For these, and other reasons, previously expressed in our Journal, I stood unalterably opposed to the ordinance proposed by the Board.

At this juncture, Dr. R. S. Hill, also speaking to the question of personal privilege, made the following remarks:

Dr. R. S. Hill: Mr. President, I realize all this is out of order, but as it has been permitted, I wonder if the Association will allow me just two or three minutes to voice some sentiments I have?

I do not wish to detain you with an argument in support of, or against the proposed ordinance. You have settled the question by rejecting the recommendation of the Board. I wish to say that I have served the Association longer than the State Health Officer. I have been a member of this Association forty-one years. I have attended forty annual sessions of this Association. I have made warm and affectionate friends in this organization. You have given me every office of honor it was within your power to give me. There is nothing more that I could aspire to, and may this silence the foul tongue that has stated that there was something else that I wanted.

Whatever I have done has been in an effort to serve as I saw it the best interest of the Association as an expression of appreciation for the honors that you have conferred upon me.

I realize that it is natural for us to differ in opinion. It is a good thing for us to differ in opinion. It is a good thing for us to agitate these questions on which we differ. The dearest thing in the world is an organization that rubber-stamps any and everything that is proposed by the officials of the organization. But let us rid our agitation and our discussions of so much personality. There is no reason why we should be personal in any of our discussions of questions concerning this organization.

Three years ago, when we did not have a State Health Officer, the Chairman of the Board of Censors and other members of the Board will bear me out in saying that I suggested this change, and, therefore, my position in this matter could have no relation whatever to the present Health Officer or to any health officer personally. It was my opinion then that the Health Officer should

not be a member of the Board of Censors. It is my opinion now that you would have served the best interest of the Association had you passed the proposed ordinance instead of rejecting it. However I have always recognized and respected your right and power to decide all matters concerning the welfare of this Association and when your decisions have not been harmonious with my views, I have nevertheless accepted them in good spirit with ill will towards none who have exercised their right to differ from me. I want every member of this Association to be my friend—at my time of life one needs the encouragement and support of friends—but if my duty, as I see it, to this organization is, inconceivable to me, incompatible with friendly relations between myself and some of you, then and in that event, in sorrow and sadness I release the hand of your friendship. I simply claim the privilege—I hope you accord me the privilege—yes, as the evening sun of my life rapidly approaches the western horizon, I claim only the privilege to serve the best interest of this Association as God Almighty gives me the power to conceive what is its best interest.

The presentation of Part I of the Report of the Board having been completed, the Association, on motion duly seconded, ratified its action on the several matters embraced therein.

Chairman Partlow: Part II relates to statistics. Since these data will be published in the Journal, I see no need for reading them.

On motion duly seconded the Association adopted Part II of the Report of the Board and directed that it be published. The report follows:

Part II

REPORT OF THE BOARD OF CENSORS AS A BOARD OF MEDICAL EXAMINERS

EXAMINATIONS HELD JULY 1931; AND JANUARY 1932

Total number examined.....	29
Total number of certificates granted.....	29
Total number of pro forma certificates granted.....	14
(a) By reciprocity with other states.....	11
(b) By virtue of examination by National Examining Board.....	2
(c) By virtue of status with United States Navy.....	1

EXAMINATION HELD JULY 14 TO JULY 17, 1931

Number of applicants examined.....	22
Number granted certificates.....	22

EXAMINATION HELD JANUARY 12 TO JANUARY 15, 1932

Number of applicants examined.....	4
Number granted certificates.....	4

SUCCESSFUL APPLICANTS IN JULY, 1931

Alexander, Julius	Knight, Julius Hurley
Alexander, Lassar	Mosley, John Thompson
Bancroft, Josiah Dozier	Muscat, Joseph Otto, Jr.
Blanton, James Russell	Nickerson, Paul
Bonner, Gerson Wallace	Partridge, Clarence Vearn
Britt, Walter Stratton, Jr.	Poole, Everett Blanks
Campbell, William Jesse	Putman, James Howard
Dawson, James Robertson, Jr.	Simpson, Thomas Roge
Jenkins, John Felix, Jr.	Spearman, George Knox
Johnson, Chester	Stinson, Willie Elijah
Earle, Jr.	Williams, Jonathan
	Richard
	Wood, Arthur Anson

SUCCESSFUL APPLICANTS IN JANUARY 1932

Clements, Ralph Mayo	Keller, Julian Jacob
Corrado, Pietro	Newman, Lucian

RECIPROCITY APPLICANTS RECEIVED APRIL 1931-APRIL 1932

Andrews, Neal Leroy—Louisiana.....	December 15, 1931
Branscomb, Louise—National Examining Board.....	September 10, 1931
Brown, Charles Pugh—Georgia.....	May 6, 1931
Cater, Job Thigpen—Illinois.....	April 7, 1932
Connell, Isee Lee—Illinois.....	October 21, 1931
Cotlin, Charles Sheffield, Jr.—Tennessee.....	August 8, 1931
Crawford, Robert Dixon, Jr.—United States Navy.....	January 11, 1932
Dodson, Mayhew Wilson, Jr.—Tennessee.....	August 8, 1931
Gilmer, Hiram Brewster—Tennessee.....	June 24, 1931
Hudson, Percy Dannelly—Georgia.....	September 12, 1931
Kahn, Sigmond Aaron—Louisiana.....	July 29, 1931
Lineberry, Ellis Dice—Virginia.....	November 17, 1931
Stabler, Ernest Vernon—National Examining Board.....	January 21, 1932
Warren, Thurston Allmon—Louisiana.....	April 21, 1932
Webb, Augusta Caesar—Illinois.....	July 29, 1931
Wilson, Joseph Dimmick—Ohio.....	October 30, 1931

Chairman Partlow: Part III is the Report of the Board as a State Committee of Public Health.

On motion duly seconded the Association adopted Part III without reading and directed that it be published. The report follows:

Part III

REPORT OF THE BOARD OF CENSORS AS A
STATE COMMITTEE OF PUBLIC
HEALTH

Submitted by J. N. Baker, M.D.,
State Health Officer

Gentlemen:

I have the honor to submit herewith my annual report as State Health Officer for the Association's fiscal year now passing into history.

ORGANIZATION FOR FIELD HEALTH WORK

The last two decades of the present century have witnessed an amazing growth in public health organization throughout the United States. The United States Public Health Service and the Rockefeller Foundation are today the outstanding agencies most interested in promoting and developing organizations through which to prosecute sound public health work in the various states. Naturally, in the earlier years of this promotional endeavor, such states as possessed some sort of existing machinery were singled out first. Sufficient experience had already been had in the building of public health machinery to be able to draw certain sound conclusions. The first was that because of the technical and specialized nature of the service to be rendered, the direction and control of such affairs should be entrusted to competently trained hands.

The second was that public health—which is naught else than the substitution of the masses for the individual, in the application of modern scientific discoveries in medicine—to be successful should give to organized medicine a voice and responsibility commensurate with its interests.

The third was that the county is the logical, basic unit for practical application of field public health work. It so happened that in Alabama all three of these prerequisites obtained. From the organized profession come both the State and county boards of health with ample voice and responsibility in health affairs both local and state-wide, and the county unit of government universally prevails. Consequently, in Alabama, with the stage thus happily set, public health work, once the proper impetus was given, grew apace. No other state can now truthfully boast of so large a percentage of rural population protected by full-time health unit service—54 of its 67 counties. Quite true it is that some of these units are still young, green and tender, whose proper growth calls for considerable succor from a parental hand; but they are our children, and our responsibility to see that none—or at least as few as possible—perish from malnutrition. For the years immediately ahead, this struggle for the preservation of the financial lives of many of these field units will likely prove the major concern of the State Committee of Public Health and of the State Health Officer. The pinching hand of the universal financial blight is already being cripplingly reflected in the amounts which can be allotted to public health work by the appropriating bodies of the various counties. There is no lack on their part of an appreciation of

the value of such service to their people but the axe of retrenchment falls first, in almost every instance, upon the newer types of obligation assumed, such as public health, child welfare and farm demonstration activities. A firm resolve has been made by your health department to preserve as many of the now existing fifty-four health units as possible. The legislature of 1931, recognizing the great good accruing to all its citizens from health activities, manifested no desire to curtail our present appropriations. Even with no curtailment here, the demands made upon these funds, in order to preserve the field activities of these units, are steadily increasing and have prompted a policy of rigid economy in all central administration. The monies thus saved can be and are being further utilized to rescue threatened units which otherwise might be lost.

In order to show that our organization is sound and that the efforts being put forth are amply justified, the following quotations are taken from a recent report made by experts from the United States Public Health Service after a study of Alabama's public health system:

"(1) The full-time county health units are well organized and as a whole are rendering highly efficient, economical, well-balanced health service.

"(2) The State Health Department of Alabama is administered with a high degree of efficiency and economy.

"(3) The citizens of Alabama have due cause for pride in the fact that their State stands at the head of the list of states in the percentage of rural population receiving the benefits of organized full-time county health unit service.

"(4) The development to a comparatively high degree of efficient and effective economical health service (State and local) in Alabama is attributable in large part to the constructive interest and to the sustaining influence of the organized medical profession of the State and to the administrative ability, farsightedness and statesmanship of the men who in truly remarkable succession during the last fifty years have been chosen to occupy the position of State Health Officer of Alabama.

"(5) The evidence leaves no room for doubt that the activities of the State Health Department and of the full-time county health units organized since 1913 have contributed and are contributing very importantly to the prevention of disease and of premature death, and to the conservation and the promotion of health among the men, women and children of Alabama. Such a result, even in much smaller degree than it has been attained, is from a humanitarian view-point beyond computation. Considered from a strictly (dollars and cents) economic view-point, the result in the decrease in recent years in the prevalence of preventable diseases in general, as is shown in the records, along with the concomitant lessened financial loss from sickness and wage deprivation, has been worth many times over the cost of the health service.

"(6) The funds made available for the support of public health service in Alabama though somewhat larger than those for some of the other Southern States are not excessive. According to all the evidence, a good return is being realized by the

people on every dollar so invested. Along with the increased and apparently increasing consuming power of the citizens for public health service larger appropriations it seems could be used to great advantage.

"(7) A reduction in the funds for public health service in Alabama would result in a crippling of a service of the utmost importance to the people of the State and of great value from a national demonstration view-point.

"(8) 'Hard times' furnish no excuse for reducing reasonable and possible investment for well-administered economical public health service. The cost of unnecessary preventable sickness is a more severe tax upon the people in hard times than it is prosperous times. As only 1.5 per cent of the total tax receipts of the State of Alabama are disbursed for health service a disastrous reduction in the disbursement to this comparatively and vitally important activity could help but little the whole fiscal status of the State".

THE UNORGANIZED COUNTIES

There still remain thirteen of the sixty-seven counties in the State without health protection from organized health units. During the past twelve months and because of the unusual financial conditions, our problem has been to hold together the units already organized, rather than to expand our fences. Through the practice of rigid economy in central administration monies thus saved are being used not only to preserve the lives of some of the jeopardized units, but also to render as much aid as possible to the unorganized counties in emergencies and in rural sanitation. Flare-ups of the more common communicable diseases, such as diphtheria, smallpox and typhoid are not uncommon in such counties, and, when brought to our attention, receive prompt and vigorous attention. During the past year, in several of these counties flare-ups of these diseases have had to be combated, notably one of diphtheria, in a sparsely settled rural county, which reaped a toll of nine deaths, before it was finally conquered, through the extensive use of antitoxin, and the immunization of some 4,000 children with toxoid. Such experiences serve forcibly to drive home the great need and value of such organized health work for every county in the State.

However, until such a desired goal is attained, physicians practicing in these unorganized counties are urged to remember that the State Health Officer and his entire staff stand willing and ready to render every possible assistance to them and their people in such emergencies.

LEGISLATION OF 1931

In the report of the Board, just submitted by Chairman Partlow, a brief resume has been given of the legislature's sympathetic and co-operative attitude towards the Health Department and of their support to organized medicine, by its unwillingness to permit the present high standards of the Medical Practice Act to be weakened or lowered. No member of this Association can fail to assume other than an appreciative attitude toward such an expression of confidence on the part of this legislature.

The most outstanding piece of constructive legislation enacted during this session, in so far as the public health is concerned, was our tuberculosis bill, which provides means whereby a county, or two or more contiguous counties, upon the establishment of a small sanatorium to care for its own tuberculosis, may participate in a special fund provided by the State, to the extent of one dollar *per diem*, for each case cared for. Alabama has never made provision for any kind of hospitalization for its tuberculous and this approach by stimulating and financially aiding counties in an effort to solve their own tuberculosis problems, met a hearty response from the people, the profession and the legislature alike. The salient features of this bill should be familiar to the members of this Association so that they may intelligently co-operate to the fullest extent with the lay groups of their communities. The complete bill is to be found in the April issue of the Journal.

A bill seeking to require county health officers to do the jail and almshouse practice in their respective counties failed in its passage. The State Health Department's views, while quite fixed as regards health officers engaging in work of an individualistic or curative nature, have to an extent been compromised in certain of the smaller counties in the effort to get health units started; but only after approval of such procedure had been given by the organized profession of such county. Proper provision is made by law whereby boards of revenue may employ physicians to do this type of practice, so that the county health officer can devote his undivided time to purely public health work as is now demanded by the existing statutes.

The health department has given aid in the passage, the amending, or strengthening of numerous other bills, looking to the improvement of a better and more co-operated health service; such as the amendment to the training schools for nurses; the remodelled pharmaceutical bill; the Workmen's Compensation Act, seeking to increase the amount allotted for surgeons, and hospital fees from \$100 to \$150 (a compromise from \$250 as originally sought); which, however, never became law; an improved embalming bill; an improved coroner's bill for Montgomery County, and others.

Almost as important as the passage of legislation of a constructive type, at least to the health department, is the careful watching of all avenues for possible legislation which might be prejudicial to the health interests of the State.

ACTIVITIES AND ACCOMPLISHMENTS OF OUR STATE LABORATORIES

The first fruits of our organization in public health are to be seen when, in 1908, Dr. Sanders, then State Health Officer, acting under instructions of the State Board of Health, established the State Laboratory and Pasteur Institute in Montgomery. It is interesting to note that at this stage of development, nearly one-half of the entire personnel of the central staff was concentrated in the laboratory. The Board and State Health Officer at that time seemed to sense the acute need for laboratory service for the physicians of this State and made heroic effort to supply this need.

Since this date—just 24 years ago—this branch of the health department has developed into the tremendously important service which you know today, with eight subsidiary laboratories located at strategic points throughout the State and serving all physicians and all peoples.

During the calendar year 1931, our central laboratory manufactured vaccines to supply the entire State as follows:

- Rabies vaccine—3,966 treatments
- Typhoid vaccine—1,013,072 cc.
- Diphtheria toxoid—275,620 cc.
- Schick toxin—10,500 cc.
- Silver Nitrate Ampules—46,896
- Tuberculin—460 cc.
- Sterile distilled water—144,750 cc.

The commercial value of the above biologics in the open market would amount to \$105,000.00; the actual cost to the State was \$9,500.00. In addition to its manufacturing activities, the State laboratories, during this period, examined a total of 292,673 specimens, of which 88,569 were Wassermann tests and at an average cost of less than 40c.

For several years preceding 1931 the State has been spending on the one item of rabies vaccine alone more than \$25,000.00 annually. At the beginning of the year 1931, the Central Laboratory undertook the manufacture of this product locally, which has resulted in a net saving of \$27,475, as is shown in the itemized statement given below:

Total treatments manufactured	3,966
Total treatments distributed	2,667
Cost of manufacture	\$3,500.00
Indigent treatments	1,505
Saving to State at \$9.00	\$13,545.00
Non-indigent treatments	1,162
Saving to citizens at \$15.00	\$17,430.00
Cost to State for indigent fees	\$15,050.00
Total cost to State	\$18,550.00
Total cost to State if treatments had been purchased	\$46,025.00
Net saving	\$27,475.00

ACTIVITIES OF OUR CHEST CLINICS

Alabama's annual death rate from tuberculosis ranges from 2,200 to 2,400; in 1929 it was 2,248; in 1930, 2,282; in 1931 2,248. With this annual death rate, the number of living, open cases in the State today, may conservatively be placed at something like 20,000.

This State has never made provision for the institutional care, on a state-wide basis, of its tuberculous, as have so many other states; and, in the light of their experiences, it has been proven that she has acted wisely in not so doing. It is becoming to be realized more and more that, in the ultimate solution of this vast problem, which is alike economic and social as well as medical, it is a community one, to which all agencies, official and volunteer, must unstintingly contribute.

Our State's participation in a program of solution is taking shape in two broad and well-defined activities, both of which recognize the importance of local responsibility alike to the medical profession and to the laity. The first plan seeks to render expert, consultant and diagnostic service to

the communities through their doctors and their local health units, to aid in the earlier recognition and the sorting out of all open cases and their contacts. The real saving of life in the years to come hinges upon the manner in which this phase of the program is prosecuted, and calls for the co-operative effort of the medical profession, the health worker and the layman. A little more than a year ago, the State, speaking through this organization, which is its legally constituted Board of Health, made its beginning in this phase of the program. May I be permitted to add here that it has been to me and my co-workers little short of an inspiration to see the splendid manner in which this work has been received and the whole hearted co-operation which has been accorded by the entire profession throughout the State. Permit me here to cite but one of many letters which have been received from local medical groups. This letter was signed by thirteen of the practicing physicians of the County Medical Society:

"Dear Doctor Baker:

"We the undersigned practicing physicians in Tallapoosa County who recently observed the work of Drs. S. B. McPheeters and P. W. Auston, to whom we referred patients in the recent series of chest clinics held in our county, desire to express our hearty endorsement of the ethical, efficient, and scientific manner in which these two gentlemen conducted the work of the clinics, and to express the hope that they may return at a later date for other clinics. We feel that the clinics are very much worth while and will prove to be of decided benefit, both to the doctors and to their clientele".

These activities, as is known to all of you, are conducted only upon invitation from the County Medical Society and the findings in each case examined are submitted to the family physician. The subsequent treatment and management of the case becomes his responsibility, the local health forces rendering such aid as might be indicated, subject to his directions. A brief summary of the work done by these clinics is given below:

Chest Clinic Records 1931

Number of clinics	71
Counties visited	47
Examinations made	4,239
Negatives	2,127-50.17%
Suspect	802-18.92%
Positive	1,280-30.19%
Diagnosis deferred	30- 0.71%

Of the 1,280 cases diagnosed as tuberculosis

- 398 were classed as minimal,
- 371 were classed as moderately advanced,
- 295 were classed as far advanced,
- 121 were classed as childhood type,
- 95 were not classed.

999 of these cases were not previously diagnosed.

Doctors visiting clinics, 460.

Doctors referring cases, 775.

In addition to the above clinics, and upon the request of the prison authorities, all the patients at the State Tuberculosis Prison Hospital, located at

Wetumpka, have been carefully examined and classified.

As the work of these clinics progresses the need for some form of hospitalization for many cases, both from the standpoint of control as well as of cure, becomes increasingly more apparent, if real headway is to be made. This leads to the second way in which the State plans participation through a per diem financial grant of one dollar to each case cared for in any county making the proper provision for the handling of its own tuberculous. The bill providing this State aid has already become law and it is hoped that many counties, in the not distant future, will take the necessary steps to enable them to participate in this subsidy.

These two plans for co-operative assistance on the part of the State have been carefully thought out and it is felt that both are intrinsically sound and should make a strong appeal for support from both the medical profession and from our people.

MALARIA CONTROL

Malaria during the years 1928 and 1929—for reasons not altogether easy of explanation, but due, possibly, to excessive rainfall and flood conditions, as well as to other causes—showed a rather sharp up-swing not only in Alabama, but throughout the South. In 1929, the death rate in Alabama from malaria was 16.4, and in 1928, it was 11.4, as contrasted with 8 in 1927. In the spring of 1930, because of this decided increase, our efforts at control were redoubled with the result that the death rate for 1930 fell to 11.9 and for 1931 it dropped to 7.8.

These field activities for malaria control have been largely an expansion of work previously begun. In certain counties malaria is a major problem, while in others it is of minor importance. It has been in these first counties that an attempt has been made to attack the problem. The appropriation by the Federal Government for drought relief work enabled us to employ a number of men for field work and to assign a man for full time work to each of nine of the most malarious counties. In addition, part of the time of four engineers has been given to this work, while in several counties the sanitary inspector has devoted considerable time to malaria control.

In brief, the program for the control of malaria has been:

- (1) Drainage.
- (2) Oiling or Paris green.
- (3) Screening or mosquito proofing of homes.
- (4) Control of impounded water.
- (5) Education of the public as to how malaria is spread and how it may be controlled. In this educational work, moving pictures have been used extensively, the department producing a film on "Screening" and one on "Drainage". A total of 341 picture shows were given during 1931.

VENEREAL DISEASE CONTROL

The problems presented for solution in the shaping of any State-wide program for curbing the spread of the venereal diseases are alike difficult, complex and delicate. While the personal equation of the stigma attached to any of the so-called social diseases cannot be lightly brushed aside, the

immediate and most urgent practical concern of the medical profession is the rendering of the infectious case, non infectious. To do this, requires adequate, sustained and thorough treatment usually extending, certainly in syphilis, over a long period of time. No physician needs to be reminded either of the potential dangers lurking in the poorly or imperfectly treated case, nor of the far-reaching sociologic aspects involved in this problem. The poverty and impecuniosity resulting from present conditions are strikingly reflected in the increased demands made for this type of service. In the handling of any health problem, whose proper control so largely hinges upon proper treatment of the individual case, every safeguard must be used to see that no infringement is made upon the prerogatives and rights of the practicing physician; while he, likewise, must be acutely conscious of his duties and responsibilities to the community as well as to his patient. No program of control is likely to succeed in which a full and sympathetic understanding of the objectives sought, as well as of the interests of the groups involved, does not exist.

Alabama's plan of approach seeks not only to give recognition to the inherent rights of physicians, but also to stimulate an active interest among the profession in control measures, by a close tying-in of its members in all its venereal clinic activities, both free and co-operative. To the free clinics—of which there are now fifteen—are admitted none except upon the request of a physician; for the co-operative clinicians—of which there are now over 200 and representing some 12% of our membership—free drugs are provided, with the understanding that only a modest fee will be charged the patient. The purpose of these clinics is to aid the physician in providing a fairly thorough course of treatment for the poorer—yet not indigent—type of case, which otherwise would receive little or no treatment at his hands.

During 1931 all clinics reported:

- 11,373 new cases of syphilis.
- 3,875 new cases of gonorrhea.
- 210 new cases of chancroid.
- 83,608 doses of arsphenamine (606).
- 91,639 doses of bismuth or mercury.
- 51,202 other treatments.
- 88,568 Wassermanns (Clinicians and other Physicians).
- 14,725 microscopic examinations.
- 7,319 discharged as non-infectious and probably cured.
- 190,508 visits to clinics.

The recent study as to the prevalence of syphilis amongst the negro, which was conducted in Macon County with the financial assistance of the Julius Rosenwald Fund was completed during the past year. In this study a total of 3,603 rural negroes were examined, of whom 1,282 or 36% had a positive Wassermann. Following the initial survey, treatment was administered to as many of the infected as possible. A remarkable record was achieved in the amount of treatment given these people. Neoarsphenamine and mercury injections were the drugs used, and the average patient re-

ceived 15.85 doses of neo and mercury inunctions for 21.85 weeks.

On motion duly seconded the Association ratified as a whole its action on Parts I, II and III of the Report of the Board.

REVISION OF THE ROLLS

The next order of business being the revision of the rolls of the Association, the Secretary was instructed by President Gaines to proceed without interruption unless there were objections. As a preface to the revision of the Roll of County Societies, the Secretary said: "County Medical Societies, to comply with the Constitution, must meet certain obligations. First, an annual report, on forms furnished by the Association, must be filed with the Secretary; second, each society is expected to be represented at the annual meeting by at least one delegate; third, fees must be paid to the Treasurer of the Association for each delegate to which the Society is entitled; and fourth, dues are to be remitted to the Treasurer for each member." With this foreword, the revision proceeded.

1. Revision of the Roll of County Societies:

(a) County societies which have fulfilled all their constitutional obligations: Baldwin, Barbour, Bibb, Blount, Bullock, Butler, Chambers, Cherokee, Chilton, Choctaw, Cleburne, Coffee, Colbert, Conecuh, Covington, Crenshaw, Cullman, Dale, Dallas, Elmore, Escambia, Etowah, Fayette, Franklin, Geneva, Houston, Jackson, Jefferson, Lamar, Lauderdale, Lawrence, Lee, Limestone, Lowndes, Macon, Madison, Marion, Marshall, Mobile, Monroe, Montgomery, Morgan, Perry, Pickens, Pike, Shelby, St. Clair, Sumter, Talladega, Tuscaloosa, Walker, Washington, Wilcox, Winston—Total 54.

No objection being made as to the correctness of this report, the President ordered that these counties be passed as clear on the books.

(b) County societies partially delinquent: Autauga, representation; Calhoun, report; Clarke, delegate dues for one; Coosa, representation and delegate dues for one; DeKalb, report and representation; Greene, report, representation and delegate dues for two; Hale, representation and county dues; Henry, report and representation; Marengo, representation; Randolph, representation; Russell, representation; Tallapoosa, representation—Total 12.

No objection being made as to the correctness of this report, the President ordered that these counties be passed, with an understanding that the Secretary and

Treasurer make an effort to remove the delinquencies.

(c) County societies totally delinquent: Clay.

In keeping with the provisions of the Constitution, the President referred Clay County to the Board of Censors for investigation.

Thereupon, the Secretary said: "In revising the Roll of the College of the Counsellors, five lists are prepared, designated respectively: (1) The schedule of counsellors clear of the books in regard to attendance and dues; (2) The schedule of delinquent counsellors—counsellors delinquent in attendance or dues, or against whom charges may be pending; (3) The schedule of miscellaneous counsellors—counsellors who have died since the last annual meeting, or have offered their resignation, or have moved out of the State or out of their respective congressional districts; (4) The schedule of active counsellors of twenty years standing; and (5) The schedule of counsellors-elect who have qualified as provided in the Constitution." With such preface, the revision was continued.

2. Revision of the Roll of Counsellors:

(a) Counsellors clear of the books: Acker, Alison, Ashcraft, Bailey, Bedsole, Brothers, Broughton, Burdeshaw, Caldwell, Cannon, Cardon, Chandler, Chenault, Crutcher, Cryer, Cunningham, Dabney, Doughty, Dowling, Dupree, Faulk, Gordon, Grace, Gragg, Granger, Greer, Gresham, Hagood, Hayes, C. P., Hayes, J. P., Heacock, Heflin, Hendrick, Hill, Hollis, Howell, Hubbard, Hutchinson, Jackson, James, A. D., James, N. G., Jordan, Leach, Lester, Lightfoot, Long, Lull, Lupton, Martin, Mason, E. M., Mason, J. M., Mayer, McAdory, McCall, McLeod, McLester, Meigs, Miles, Miller, Morris, Moxley, Newman, Noel, Nolen, Oates, Price, Ralls, Redden, Rountree, Rucker, Sankey, Scott, Searcy, Shropshire, Sledge, Smith, Speir, Tankersley, Taylor, Thomas, Tucker, Turner, Waldrop, Walker, Walls, Ward, White, Wilkerson, Williams, Williamson.

In the absence of objection, the President ordered the names of these counsellors, reported as clear of the books, passed.

(b) Delinquent counsellors: J. W. Jordan, dues.

(c) Miscellaneous counsellors:

(1) Life Counsellors who have died: A. L. Harlan, T. P. DeWeese.

(2) Active Counsellors who have died: J. M. Watkins, J. W. Robertson.

(3) Active Counsellors who have moved: None.

(4) Active Counsellors who have resigned: L. R. Wright, R. H. Hamrick.

(d) Active Counsellors of twenty years standing: W. M. Cunningham, J. P. Turner, J. D. Heacock.

(e) Counsellors-elect who have properly qualified: Sibley Holmes, E. L. Kelly.

The President directed that the names of Drs. Harlan, DeWeese, Watkins, and Robertson be transferred to the Book of the Dead; that the names of Drs. L. R. Wright and R. H. Hamrick be removed from the roll; that the names of Drs. W. M. Cunningham, J. P. Turner and J. D. Heacock be added to the Roll of Life Counsellors; and that the names of Drs. Holmes and Kelly be placed on the Roll of Active Counsellors.

3. *Revision of the Roll of Correspondents:*

The names of George H. Price, Robert Abbe, Frank S. Meara, George E. Bushnell, J. D. S. Davis, James S. Stone and John B. Deaver, deceased, were removed from the Roll.

The names of Robert S. Cunningham and A. Benson Cannon, Jerome Cochran Lecturers in 1931 and 1932, respectively, were added to the Roll.

4. *Revision of the Roll of Officers:*

Dr. Samuel Kirkpatrick of Selma was elected President, his term being one year. Dr. E. D. McAdory, Cullman, was elected Vice-President of the Northwestern Division, his term being four years. Drs. W. D. Partlow, Tuscaloosa, and C. A. Thigpen, Montgomery, were elected Censors for five years; Dr. E. V. Caldwell, Huntsville, was elected Censor for three years to fill the unexpired term of Dr. A. L. Harlan, deceased.

Committees constitutionally provided to nominate counsellors brought in the following nominations: From the Second District, R. A. Smith, T. B. Hubbard, and R. B. Beard. From the Third District, G. H. Moore, G. W. Williamson, and P. M. Lightfoot. From the Fourth District, G. A. Cryer, J. W. Jordan, and W. M. Salter. From the Fifth District, S. H. Newman and M. L. Shaddix. From the Seventh District, W. E. Howell and D. H. Wright. From the Eighth District, E. V. Caldwell, W. R. Taylor and A. A. Jackson. From the Ninth District, J. M. Mason, J. R. Garber and D. S. Moore.

Whereupon the following discussion was engaged in:

Dr. W. G. Casey: As a delegate from Talladega County in the Fourth District, I want to present a minority report.

Dr. Jerre Watson: Mr. President, I rise to a point of order. It is unconstitutional to make nominations in this body.

Dr. J. R. Garber: He hasn't nominated.

Dr. W. G. Casey: I merely want to make a minority report and give you my reasons for so doing. The minority report is to carry a name along with that of Dr. Salter.

Dr. Jerre Watson: Mr. Chairman, I was a member of the committee that met from Dr. Casey's district. There was no division. There was no minority vote. The nomination as made was unanimous.

President Gaines: I will recognize this gentleman, and then recognize you, Dr. Watson.

Dr. W. G. Casey: We have two reasons for this suggestion we are making to the organization today. First, the meeting was not a representative one. The Fourth District, as you all know, includes eight counties. There were two counties represented, two men from each county, and one of those was made chairman of the meeting and did not vote in the election.

Second, Calhoun County now has three active counsellors with a membership of approximately 44. Talladega County has one active counsellor.

Therefore, I want to present the name of Dr. French Craddock from Sylacauga, along with Dr. Salter, and let the Association settle the question.

Dr. Jerre Watson: Mr. Chairman, I think in view of the statement that has been made, it is entirely proper that the entire proceedings of the delegation from the Fourth District, meeting here at the appointed time, be made clear. We did this: We elected a chairman. The nominees were presented. We thought at that time we had two vacancies to fill. I remember that the first vacancy was one to fill the unexpired term of a man elevated to Life Counsellor. The man being promoted to Life Counsellor automatically created a vacancy, and Dr. Salter was nominated to fill that place. We thought we would also have a vacancy to take the place of another man who was a member of the old Fourth District. It came to our attention later that the change of districts had thrown him into another district. That being true, there was only one vacancy to be filled in the Fourth District. I, also from Calhoun County, was nominated before this was found out for the unexpired term of the man who had been dropped from the College of Counsellors.

Talladega County, represented at that meeting, raised the objection that Calhoun County already had more than its pro rata share of counsellors. Of course, you gen-

gentlemen recognize fully there is no such thing in our Association as pro rata distribution of representatives of this body. That was voted upon this morning by this body in the approval of the Board's recommendation concerning the distribution of members of the Board of Censors. At the time this matter was brought to our attention by one of the gentlemen from Talladega County, I was engaged in conversation and didn't know about it. When it was called to my attention, I withdrew my nomination and nominated Dr. Casey of Talladega County.

What has taken place here this morning has been a surprise to me—none of the gentlemen had said a word to me about it; I have not been approached in regard to the matter. There was no unfairness in the nomination of counsellors. I did the best I could to produce harmony by withdrawing my name.

Dr. K. A. Mayer: Mr. President, I rise to a point of personal privilege.

Dr. Jerre Watson: Mr. President, all questions of personal privilege, by vote this morning, was voted out until after the conclusion of the business session.

Dr. K. A. Mayer: Dr. French Craddock came to me and said there were four men present at the committee meeting; that he was nominated as chairman of the committee; that he was a modest man and did not care to vote; and that there were three votes, and they had two of them.

President Gaines: The gentleman rose to a point of personal privilege. That is not personal privilege.

Dr. C. A. Mohr: Mr. President, I move you, sir, that the name of Dr. Craddock be added to the nominees of the Fourth District.

President Gaines: I do not believe that we have the power to do that. Nominations are made from these different groups but you do not have to vote for the nominees. Article VI, Section 12, of The Constitution provides: "*No obligation shall rest upon counsellors or delegates to vote for the nominees proposed by the committees, they being at liberty to vote for other eligible persons from the same congressional districts as the respective nominees.*"

Dr. K. A. Mayer: I say no nominations have been made. The Association is asked

to include Dr. Craddock's name with those which the Secretary has written on the blackboard.

President Gaines: Those are nominations.

Dr. K. A. Mayer: It is a majority report. This is a minority report.

President Gaines: My ruling is the nominations are made by the committees. You can't make them from the floor, but you can vote for whom you please.

Dr. L. E. Broughton: Mr. President, that being the case, we shall have to vote for each Congressional District separately. You can vote for all those on the blackboard or for none of them. Those are the nominees but you can vote for whom you please.

Dr. E. V. Caldwell: I make a motion we enter into the election of the counsellors from the Fourth District and ballot on that district now, and the others we can elect by acclamation.

The motion was seconded and carried.

On vote by ballot, Drs. Cryer, Jordan and Craddock were elected Counsellors from the Fourth District.

Whereupon it was moved and seconded that the Secretary cast the ballot of the Association for the counsellors from the remaining districts. The motion carrying, the Secretary cast the ballot of the Association for the nominees from the Second, Third, Fifth, Seventh, Eighth, and Ninth Congressional Districts.

Miscellaneous Business

A resolution was unanimously adopted expressing the Association's gratitude to the Mobile County Medical Society for the very delightful occasion afforded.

Dr. William S. Hannah, President of the Montgomery County Medical Society, invited the Association to be its guests in 1933. The invitation was unanimously accepted.

President Gaines requested Dr. Courtney Shropshire to introduce Dr. Samuel Kirkpatrick, President for 1932-1933. Dr. Kirkpatrick briefly thanked the Association for the honor accorded him.

Whereupon the Sixty-Fifth Consecutive Annual Session of the Medical Association of the State of Alabama adjourned to meet in Montgomery, April 18-21, 1933.

DEPARTMENT OF PUBLIC HEALTH

BUREAU OF LABORATORIES

L. C. Havens, M. D., Director

THE ANTIGENIC PROPERTIES OF RABIES VIRUS

It has been known for a long time that the virus diseases produce a lasting immunity of high degree. A second attack of smallpox is rare, if not unknown, and an attack of yellow fever, as Sawyer¹ has shown by serum neutralization tests, results in protective antibodies which persist for as long as seventy-five years. Similarly, in measles, chickenpox, poliomyelitis, and many other filtrable virus diseases, a second attack is rare, although exposure occurs again and again.

That artificial immunity against smallpox can be conferred by vaccination with attenuated virus has been known since Jenner's time, and, for fifty years, since Pasteur's discovery that attenuated rabies virus would immunize against that disease, persons who have been exposed have been protected in this way with a high degree of success. Sawyer² has recently reported successful vaccination against yellow fever by injections of virus which has been attenuated for monkeys and man by continued passage through the brain of the mouse. Protection of dogs against distemper has been accomplished by injections of spleen containing attenuated virus.

All of the successful results in immunization against viruses have been accomplished by means of living, though attenuated, virus. All attempts with killed virus have failed and, in consequence of these observations, the theory has developed that the group of so-called filtrable viruses, in contrast to the bacterial infections, are not effective as antigens except in the living state. Zinsser,³ for example, states that "unless some reaction to the living agent has occurred, no immunity results". In other words, there must be actual disease or infection, however slight, in order for immunity to develop.

Some students of the subject have extended the theory to include the hypothesis

that individual immunity to viruses is coincidental with the presence of the virus. As long as the virus persists in the body, resistance continues, but the immunity is lost as soon as the virus disappears. That viruses may persist in the animal body for a long period of time after complete recovery has been shown by Olitsky and Long⁴ who recovered, by means of cataphoresis, vaccinia virus from the tissues of rabbits as long as forty-one days after infection. In other rabbits the virus could not be demonstrated and these animals were susceptible to reinfection.

It is difficult to generalize in the field of the filtrable viruses, because there is so much yet that is unknown about their characteristics. They include a widely distributed variety of diseases, involving plants and animals as well as man. Individual viruses may differ between themselves as much as the various species of bacteria. It might appear that rabies is an exception to the considerations just noted. Immunity to this disease is readily produced by injections of phenolized virus which is entirely non-infectious, as shown by injections of many thousand times the amount of the untreated virus which will always infect. This, however, does not constitute conclusive proof that the virus is dead; it may merely have lost its invasiveness. We have no such definite criteria of the living state of viruses as we have for bacteria which can readily be cultivated on simple artificial media.

Until recently viruses have been supposed to differ from bacteria in another fundamental antigenic characteristic. While lasting and solid immunity can be produced following the infection of the living, attenuated virus, the only property of the immune serum which could be proved was the specific neutralizing or virucidal activity. Agglutinins, precipitins and complement-fixing antibodies which can be readily demonstrated in the serum of animals immune to bacterial infections, apparently were not produced during the course of immunization against viruses. Within the past few years it has appeared that the failure to elicit these antibodies is

(1) Sawyer, W. A.: *Prev. Med.* 5,413, 1931.

(2) Sawyer, W. A., Kitchen, S. F., & Lloyd, Wray: *J. Exper. Med.* 55, 945, 1932.

(3) Zinsser, Hans: *Resistance to Infectious Diseases*. New York, Mac Millan Co. 1931, p. 514.

(4) *J. Exper. Med.* 50,263, 1929.

due to inappropriate methods. Demonstrations of complement-fixing and flocculating antibodies against the different viruses have followed one another in rapid succession. There is now convincing evidence that the viruses behave in the same manner as bacterial antigens and immunity results in the production of the same sort of antibodies. Agglutination and complement fixation in smallpox and vaccinia has been repeatedly demonstrated and Havens and Mayfield⁵ have described a diagnostic test for the differentiation of smallpox and chickenpox, utilizing the patient's serum.

More recently complement fixation or agglutination has been shown for yellow fever⁶, foot and mouth disease⁷, herpes,⁸ and rabies⁹. Rabies virus has recently been studied in detail in this laboratory. It has been found that, using appropriate suspensions of virus as antigens, there is specific complement fixation and agglutination. Furthermore the reaction occurs with heated and phenolized virus in the same manner as with the fresh, fully virulent material. The fact that specific union of dead antigen and antibody takes place in the test tube does not necessarily constitute evidence that the dead virus is capable of stimulating immunity in the body. The reaction may be analogous to that of the specific carbohydrate of the pneumococcus which is able to precipitate the specific immune serum but does not cause the production of antibodies on animal injection.

The studies have shown further that different strains of rabies virus differ in their antigenic composition. A moderate amount of immunity in the rabbit produced by vaccination with a single strain will protect against the homologous virus but will not be sufficient to prevent infection with a different virus. Similarly, the amount of immune serum sufficient to neutralize the virus against which the serum was produced will not completely neutralize another vi-

rus. If the amount of serum is increased or if the animal is hyperimmunized by a larger number of injections of the vaccine, then neutralization and complete protection result against the heterologous strains. This indicates that all strains of rabies virus possess a certain common fraction in their make-up and that the differences observed are due to the possession or absence, in whole or in part, of additional antigenic factors.

Furthermore, it provides a rational basis for the preventive treatment of persons exposed to rabies. It seems probable that the number of injections and the size of the dose used results in the production of a large amount of the common antibody, thus furnishing complete protection against all strains. A smaller number of injections might not be sufficient to produce adequate immunity against every strain. This is probably the explanation of the observed failures in the prophylactic vaccination of dogs. A single injection of one strain of virus, while it furnishes protection against that strain, is not sufficient to stimulate antibodies against other strains which have a different composition.

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

ACID-FAST SPUTUM IN THE ABSENCE OF PHYSICAL OR ROENTGENOLOGICAL FINDINGS

Contributed by

R. Alec Brown, M. D., Clinician

With our present-day refinements of x-ray technique, Lawrason Brown, Fishberg, and others are justified in refuting Sir William Osler's dictum: "One positive sputum constitutes grounds for a diagnosis of pulmonary tuberculosis". The physician, however, who gets only one positive sputum on a case with absolutely no physical findings or roentgenologic evidence of pathology naturally asks, "What does it mean and what should I do about it?"

To be sure that such a condition actually obtains, every source of error should be ruled out and our first thought is to doubt the laboratory. For this reason, it is highly advisable to have repeated sputum examinations until two or three positives have been obtained. Should all subsequent

(5) J. Infect. Dis. 50,242, 1932.

(6) Frohisher, M.: Proc. Soc. Exper. Biol. and Med. 10,393, 1929; Davis, G. E.: Am. J. Hyg. 13, 79, 1931.

(7) Ciuca, A.: J. Hyg. 28 325, 1929.

(8) Takaki, J. and Koref, O.: Zeitschr. J. Immunitat. 47, 431, 1926; Bedson, S. P. and Bland, J. O. W.: Brit. J. Exper. Path. 10, 393, 1929.

(9) Havens, L. C. and Mayfield, C. R.: J. Infect. Dis. 50, 367, 1932.

smears prove negative, then cultures of the sputum or guinea-pig inoculations are warranted. The various culture methods are considered by many laboratories to be quite as delicate as the inoculation method. Either procedure, however, will not only show up tubercle bacilli that were present in too few numbers to be detected by direct smears, but will also rule out the various other acid-fast organisms.

In the meantime, the patient in question should receive subsequent physical examinations and if the x-ray plates are at all doubtful, others should be taken with varying techniques. This may reveal lesions not previously noted. At this point, it is significant to quote Lawrason Brown in saying that the x-ray shows pathologic evidence of pulmonary tuberculosis in over 98% of all positive sputum cases. This is far from true of the physical examination. It is also well to be reminded of the fact that a positive sputum with associated findings is most conclusive. A negative sputum means nothing, for an advanced pulmonary tuberculosis can exist and the sputum remain negative so long as there is no bronchogenic ulceration.

In conclusion, one positive sputum, in the absence of all other findings, must necessarily call for exhaustive study, not only from the laboratory's standpoint, with repeated smears and cultures, but also from a clinical standpoint. Until such studies are made, this patient warrants an "Observation" classification. A consistently positive sputum with no associated physical or roentgenological findings warrants a diagnosis of *suspected* pulmonary tuberculosis. With careful clinical observation, most of these cases will eventually prove to have unmistakable pulmonary tuberculosis.

BUREAU OF ENGINEERING

G. H. Hazlehurst, Director

A MALARIA SURVEY FOR CONTROL PURPOSES

Contributed by

P. A. Stephens

Although malaria control in Alabama is a major public health problem, the disease is not evenly distributed over the State or over any one county. It is seldom the case where even a minor subdivision of a county, as for instance an entire beat, is affected. In some areas it presents one of the

most difficult problems to locate and control with which health workers have to deal. In many instances doctors' reports and conferences with practicing physicians will determine the approximate location of foci, but only through field investigations and the cooperation of physicians and residents of a community can the problem be more definitely located.

There are several types of surveys which will give much information as to malaria prevalence, transmission, intensity and geographic extent. The purpose and intent of this paper is not a discussion of one method against the other, but to discuss a way, which, if carried out by a capable worker under the direction of a physician, will secure valuable information quickly, thoroughly and cheaply.

Where malaria is reported from a district in such quantity as would indicate transmission, a survey should be made by a health worker who has been thoroughly trained in the fundamentals of malaria control, and who is an optimist and a practical psychologist. For such a survey to be of value, certain principles must be adhered to. First, a topographic map must be made, showing the location of all streams, ponds and lakes, together with houses, roads, churches, and schools. Anopheles mosquito breeding areas should be accurately located in the field and shown on the map. Such a survey should be made during the summer months to determine whether or not the *Anopheles quadrimaculatus* mosquito is being produced in the community.

A house-to-house canvass should then be made. This procedure consists of asking direct questions to a responsible member of a household. The worker must command absolute confidence of the people in order to get unbiased answers and opinions. Social activities must be ascertained, especially the nocturnal habits of the people as a whole. The physical condition and geographic location of houses with respect to breeding areas must be determined. At the time of taking histories, several conditions will determine whether or not the disease is being transmitted in the district. The reported occurrence of malaria among children from one to three years of age and among new residents which have moved into an area from a non-malarious communi-

ty are good indices. However, these conditions are not infallible. The presence or absence of adult *Anopheles quadrimaculatus* mosquitoes in and around a dwelling is probably the most reliable of all indications. The larvae may be found in large quantities, yet certain conditions may in some instances prevent development to the adult state.

By correlating the information secured by such a survey, a method of control can usually be determined that will produce satisfactory results. Should there be a need for further proof, other methods must supplement this type survey. Such needs are usually for presentation before courts, or for scientific and statistical purposes.

BUREAU OF INSPECTION

C. A. Abele, Director

INTERSTATE INSPECTION OF FOOD-HANDLING ESTABLISHMENTS

(Concluded from the June number)

It must be borne in mind that no middle course, between inspections or assurances of compliance, and the placement of embargoes, is available. Samples of bread, cake, or pastry, or bottled beverages, or milk or ice cream, taken from shipments at the State boundaries and examined, would be in but very slight degree revelatory of the degree of compliance with the Alabama State Board of Health regulations existing at the time and place of their production or manufacture.

It appears, then, that the prohibition of the sale in this State of foods produced or manufactured in other states, but the compliance of which with certain regulations has not been established, and will not be permitted to be established, is an untenable policy. As a matter of fact, it would be far more expensive to effectively enforce such a policy than to provide for the conduct of inspections at 3 to 6 months' intervals.

Since the dubiousness of the wisdom of both the first and second alternatives also seems to be indicated, it appears to follow that the continued conduct of inspections of bakeries, bottling plants, and ice cream plants, and dairy farms in adjacent states, which market their products in this State, is the only logical procedure—at least until the reliability of assurances from state or local authorities is established.

Such a policy does not imply that inspectors of the Alabama State Board of Health are at the call of any manufacturer or dairyman, however distant from the State boundary, who wishes to market his product in this State. Inspections should not be made upon request unless the traveling expenses of the inspector, from his headquarters or the Alabama city nearest the boundary where he crosses it, are paid by the person requesting the inspection.

Several frequently propounded questions remain to be answered:

The first of these concerns the legality of inspections made and instructions issued by agents of the Alabama State Board of Health beyond the sovereignty of Alabama. The answer to this question is the fact that it is not mandatory that any establishment proprietor or operator, beyond the boundaries of the State of Alabama, submit to the inspection of his place of business. The conditions existing and processes and practices followed in his plant in the production or preparation of foods or beverages marketed in Alabama are, however, definitely subject to the regulations of the Alabama State Board of Health. Any such proprietor has the alternative, therefore, of voluntarily opening his establishment to inspection so that the degree of compliance with the said regulations may be ascertained (and that he may be advised and instructed as to how to comply with the regulations) or of discontinuing, voluntarily or compulsorily, the marketing of his products in Alabama.

Since it is an established principle of commerce that the laws and regulations of the states in which products are marketed must be complied with by articles shipped interstate, no serious protests to such out-of-state inspections have been encountered. Such misunderstandings as have arisen have been promptly clarified.

The question of the legality of the expenditure of State appropriations for inspections beyond the boundaries of Alabama, has been raised. The answer to this question lies in the fact that the inspection of such out-of-state establishments is as essential to the protection of the citizens and inhabitants of this State as is the inspection of Alabama establishments, the importance of these inspections being in direct ratio to

the numbers of Alabama and out-of-state establishments engaged in the production of foods consumed in this State.

All regulatory measures affect to some extent the practices and interests of commerce and industry. It has been the policy of the State Board of Health to administer and enforce its regulations so as to maintain at a minimum any adverse effects upon commerce and industry. Whenever the interest of the public health necessitates the discontinuance or alteration of practices common to an industry or business, and a certain degree of adverse effect upon such a business is inevitable, the most certain means of keeping such adverse effect at a minimum is to apply such regulations impartially to all units of such a business, so that no one unit continues to profit (by virtue of violations) at the expense of those which comply with the regulations.

The significance and importance of this principle becomes very apparent in the enforcement of the regulations upon Alabama establishments close to the State boundaries. The Alabama baker, bottler, dairyman, or ice cream maker, who complies with the Alabama State Board of Health regulations is very much interested in the degree of compliance accorded these regulations by his competitors who ship products into his trade territory from the adjoining state. According to all the rules of equity, it would seem to be a reasonable use of State appropriations, derived partly from taxes levied upon the industry and commerce of such persons, that the same program which prescribes rules for their conduct, at certain cost to them, should also apply to their competitors from other states, as a protection to their investments, as well as for the protection of the Alabama public.

Of course, the view that the inspection of out-of-state establishments and the determination that they comply with the regulations and may with safety market their products in this State, actually creates competition, might be expressed. The charge has actually been made that State funds are being used for the inspection of out-of-state establishments to the injury of Alabama industry and commerce. This view implies that the fourth control alternative aforementioned should be adopted; but it has

been shown that such a policy is both untenable in equity, and, if applied to all food products entering the State (which is the only consistent procedure) is far more costly than inspections.

The criterion of any public policy should be the attainment of the greatest degree of benefit to the greatest number of persons with the least degree of injury to any individual. The policies of the State Board of Health should pertain primarily to the protection of the public health, with as little impingement upon or entanglement with business or commerce as possible. In accordance with these fundamental principles, and in consideration of the foregoing statements, it appears that the State Board of Health should continue in its present policy of conducting inspections of out-of-state establishments, assuming, of course, that such a policy continues to meet with the approval of the interested authorities of the states concerned.

BUREAU OF CHILD HYGIENE AND PUBLIC HEALTH NURSING

Jessie L. Marriner, Director

WHO'S AFRAID?*

The title of this little homily is to be—"Who's Afraid?" First, think of two little boys having a dispute: "You tore my coat." "Didn't." "Did." "Never no such thing." "I'll tell my father on you, and he'll whale you good." "Aw, who's afraid?" And so, they glare at one another as they edge side-wise and sling lumps of clay from a safe distance.

Did you ever see an ostrich? The bird which produces the showy plumes for Knight Templars' hats acts in a most peculiar way when startled. His home, you know, is always on a sandy shore and when startled, the ostrich buries his head in the sand and stands foolishly with his plumes waving in air but his eyes are covered and his voice smothered in sand; nevertheless, his attitude says plainer than words: "Who's afraid?"

FEAR—yes, that's what I'm talking about. Every human being has to learn how to meet it and deal with it; from the cradle to the grave fears and dreads beset us. The lower animals are endowed by

*Address prepared for Choctaw County Field Day, May 30, 1932.

instinct with a pattern of action in the face of danger. But man is endowed with intelligence and the power of reasoning things out. Much of man's time and thought has been devoted to the problem of avoiding the dangers which he knows surround him. Many victories have been won and every year adds to the safety of human life.

In spite of his superior intellect, man is sometimes swayed by panicky fears such as those which create a stampede among cattle. This sometimes accounts for the acts of mobs. But even more emphatically, it might be said that the vague shadowy fears which beset every human being are the cause of more acute suffering, than sickness itself.

It becomes absolutely necessary for man to somehow escape from his fears. One may attempt to do this by denying fear like the little boy, saying "Who's afraid?" or like the ostrich who prefers to be blind and deaf in the face of danger. Others have the courage to face the facts after these have been found out and to seek every known means of avoiding dangers which can be foreseen and averted.

Dangers which can not be foreseen may well be ignored or may become the subject of faith; David was able to write: "I sought the Lord and He delivered me out of all my fears." This is the royal road to courage and it is open to everyone.

What then, are some of the dangers from which we have found a refuge?

The tornado has its storm pit.

Tornado victims may die of their injuries but they need not die of lockjaw, if the preventive agent is given promptly.

Even a mad dog scare loses much of its fearfulness when we see it as a summons to put forth our energies and take advantage of the measures provided by modern medicine to prevent rabies, in persons bitten by a mad dog.

The conquest of fear means dealing intelligently with our fears.

"Who's afraid?" means also "Who's cowardly?" Isn't it cowardly to trust blindly to luck or instinct when a reasonably sure protection can be had?

Certain periods of human life present special problems in that dangers to health and life are not only more severe but more numerous. What are these marked danger periods?

Early infancy

Preschool age

Middle age

Some of the ways of safeguarding early infancy:

1. Early and adequate medical supervision for the expectant mother.

2. A careful and well qualified attendant at birth.

3. Adequate medical supervision and nursing care. Breast feeding.

Safeguards for the preschool age:

1. Medical and nursing supervision as to food and habit forming. Supervised play.

2. Sunlight; cod liver oil; orange juice; cow's milk; fresh fruit; green vegetables.

3. Immunization against diphtheria, smallpox, typhoid fever and other diseases as soon as measures are authorized.

Safeguards for the middle age period:

1. Periodic medical examinations; diet adequate in quality and protective elements.

In addition to these safeguards learn the 46th Psalm and repeat it frequently.

"God is our refuge and strength, a very present help in trouble.

Therefore will we not fear, though the earth do change,

And though the mountains be shaken
into the heart of the seas;

Though the waters thereof roar and be troubled,

Though the mountains tremble with
the swelling thereof."

Or the prayer of Robert Louis Stevenson
to The Celestial Surgeon:

"If I have faltered more or less in my
great task of happiness,

If I have moved among my race and
shown no glorious morning face,

If books and my food and summer rain
beat on my sullen heart in vain,

Lord, Thy most pointed pleasure take,
and stab my spirit broad awake!"

Parents are sometimes filled with fears
when they look upon their children. They
fear that their wisdom and providence may
not prove equal to the task of rearing prop-
erly so great a gift.

But for any human being to

"Hold back the hand from the rose

For fear of the thorn, or

From life for fear of death

That,—is to be AFRAID!"

CURRENT STATISTICS

State Department of Health

*PREVALENCE OF COMMUNICABLE
DISEASES IN ALABAMA

	1932 May	1932 April	Total Cases to Date	
			This Year	Last Year
Typhoid	27	39	212	131
Malaria	132	74	347	444
Smallpox	52	81	383	209
Measles	38	111	219	8729
Scarlet fever	25	71	450	735
Whooping cough	178	304	839	373
Diphtheria	38	77	480	501
Tuberculosis	437	438	1955	2240
Pellagra	150	45	255	330
Meningitis	7	9	34	159
Tetanus	5	9	23	14
Influenza	154	1301	2459	5715
Dengue	0	1	2	1
Poliomyelitis	1	2	11	17
Pneumonia	143	501	1729	2601
Chickenpox	93	221	810	1390
Mumps	139	199	655	946
Encephalitis	3	1	6	23
Ophthalmia neonatorum	2	5	12	8
Trachoma	9	12	35	13
Tularemia	0	0	0	2
Undulant fever	4	3	21	5
Rabies	4	0	5	6
Syphilis (private cases)	0	0	0	0
Chancroid (private cases)	191	204	855	625
Gonorrhea (private cases)	4	2	25	23
	119	116	605	700

*As reported by physicians and including deaths not reported as cases.

PROVISIONAL MORTALITY STATISTICS
Alabama, April 1932

	Number of Deaths Registered April 1932			Annual Rate per 100,000 Population		
	White	Black	Total	April 1932	April 1931	April 1930
ALL CAUSES	1175	1081	2256	1015.0	1185.4	1218.2
Typhoid fever	5	3	8	3.6	3.2	3.2
Smallpox					18.5	5.0
Measles					0.9	0.9
Scarlet fever	2		2	0.9	1.8	14.7
Whooping cough	4	8	12	5.4	2.7	2.7
Diphtheria	5	3	8	3.6	7.9	50.4
Influenza	71	61	135	60.7	124.2	141.2
Pneumonia, all forms	121	86	207	93.1	0.4	1.4
Poliomyelitis						1.4
Tetanus	2	5	7	3.1		
Tuberculosis, all forms	57	124	181	81.4	120.0	103.2
Tuberculosis, pulmonary	57	108	162	72.9	93.9	93.6
Malaria	3	4	7	3.1	3.6	5.5
Cancer, all forms	80	31	111	49.9	54.9	50.9
Diabetes mellitus	9	7	16	7.2	7.7	8.3
Pellagra	11	16	27	12.1	18.6	22.5
Cerebral hemorrhage, apoplexy	74	71	145	65.2	87.6	60.0
Diseases of heart	145	94	239	107.5	122.0	145.4
Diarrhea and enteritis						
Under 2 years	14	6	20	9.0	5.4	8.3
2 years and over	7	4	11	4.9	3.2	3.2
Nephritis	106	90	196	88.2	97.5	112.4
Puerperal state, total	17	19	36	16.2	21.8	21.6
Puerperal septicemia		3	3	1.3	4.1	6.9
Congenital malformation	8	3	11	4.9	9.5	8.3
Congenital debility and other diseases of early infancy	73	44	117	52.6	55.3	64.7
Senility	17	19	36	16.2	19.9	20.6
Suicides	16	1	17	7.6	11.8	6.9
Homicides	12	23	35	15.7	26.7	19.7
Accidental burns	6	4	10	4.5	8.6	6.0
Accidental drownings	6	4	10	4.5	4.1	5.5
Accidental traumatism						
by firearms	4	4	8	3.6	2.7	2.7
Mine accidents	2		2	0.9	0.9	2.3
Railroad accidents	1	3	4	1.8	2.3	1.4
Automobile accidents	21	7	28	12.6	15.0	12.8
Other external causes	50	30	80	36.0	20.9	15.6
Other specified causes	165	136	301	135.4	166.0	175.2
Ill-defined and unknown causes	58	171	229	103.0	116.0	113.3

COMMENT

The death rate continues unusually low. The rate for the first quarter of 1932 showed a decrease of 11% over 1930 or 1931. All of the principal causes of death, excepting cancer, show a marked decrease for the first quarter of 1932 as compared with the first quarter of 1931. The decrease in influenza, pneumonia, and nephritis is particularly marked. Influenza had a rate of 85.0 per 100,000 for the first three months of 1931, while the rate was only 46.0 for the same period of 1932. The pneumonia rate was 140.4 for 1931 and 101.0 for 1932. Nephritis showed a rate of 93.9 for the first quarter of 1931 and 56.7 for 1932. Tuberculosis and diseases of the heart show a slight decrease. Cancer is showing a slight but steady increase each year.

Medical News

(Secretaries of county medical societies and other physicians will confer a favor by sending for this section of the Journal items of news relating to society activities.)

At a meeting of the Northeastern Division of the Association held in Scottsboro, June 3, Dr. A. C. Gipson, Gadsden, read a paper on cultivating the child's appetite; Dr. E. V. Caldwell, Huntsville, discussed the diagnosis and treatment of fractures of the pelvis; Dr. Hugh Boyd, Scottsboro, reported a case of Rocky Mountain spotted fever; Dr. G. P. Haymore, Chattanooga, Tennessee, presented a paper on subacute bacterial endocarditis; Dr. Seale Harris, Birmingham, discussed epilepsy, associated with hyperinsulinism, and its control by diet; and Dr. M. R. Moorman, Huntsville, read a paper on otomycolosis. The Vice-President of the division, Dr. W. M. Salter, Aniston, presided.

Dr. A. P. Martin, father of Dr. Henry Martin, Birmingham, and Dr. John A. Martin, Montgomery, died on May 27 at his home in Cullman.

The second in a series of chest clinics being conducted by the State Department of Health was held in the offices of the Jackson County Health Department, Scottsboro, May 16-20.

Dr. R. R. Bridges, Scottsboro, has established offices in the new Rosson Building.

Dr. W. C. Williams, Bridgeport, attended the recent graduating exercises of the University of Alabama at which time his son received his degree.

Dr. Andrew C. Ivy, Professor of Physiology and Pharmacology, Northwestern University Medical School, Chicago, delivered the annual address before the Gorgas Medical Society of the School of Medicine, University of Alabama, May 7. His subject was "Physiologic Aspects of the Etiology, Symptoms, and Treatment of Gastroduodenal Ulcer." Honorary Fellowship in the Society was conferred upon Dr. Ivy following the address.

Plans are under way for moving the Monroeville Hospital into larger quarters. It is planned also to increase present equipment.

Dr. L. L. Hill, Jr., Montgomery, was awarded the degree of Master of Science in Surgery by Tulane University of Louisiana School of Medicine at its recent commencement. Dr. Hill, already holding degrees as Bachelor of Science and Doctor of Medicine, was awarded his last degree for surgical work done while an interne in Touro Infirmary, New Orleans, and original work on the kidneys done last summer at Tulane.

Dr. W. S. McElrath, of Cedar Bluff, has been appointed a member of the Court of County Commissioners of Cherokee County.

The Houston County Medical Society held its regular July meeting in the form of an old time country picnic and barbecue at Bazemore's Mill Pond July 1st. Very interesting talks were given by the Chairman of the Board of Health, Dr. M. S. Davie, and by the Chairman of the Board of Revenue, Judge H. K. Martin. The chief address was delivered by the State Health Officer, Dr. J. N. Baker.

Book Abstracts and Reviews

Electrosurgery: By Howard A. Kelly, M.D., LL.D., F.A.C.S., Baltimore, Maryland, and Grant E. Ward, M.D., F.A.C.S., Baltimore, Maryland. 305 pages with 382 illustrations by William P. Didusch and others. Cloth, \$7.00 net. Philadelphia and London. W. B. Saunders Company, 1932.

For over thirty years, in various parts of the world, physicists, electrical engineers and surgeons have been working on the problem of utilizing high frequency currents as a substitute for or an adjunct to the scalpel. Machines are now on the market and are available for individual use. These machines produce three types of current—a monopolar, desiccating current; a bipolar, coagulating current; and a current of extremely high frequency which possesses the capacity to cut rapidly and to seal lymphatics and capillaries as it cuts. Electrosurgery, which is the application of these currents to accomplish surgical procedures, possesses many distinctive advantages over the surgery of the scissors and scalpel. Oozing from small vessels is reduced to a minimum, medium-sized vessels may be coagulated in a fraction of a second, thus saving time and avoiding the necessity of introducing large amounts of catgut into the wound. Vascular organs like the kidney, bladder, liver, thyroid, and brain may be resected quickly and with a minimum loss of time. Because of its capacity to destroy tumor cells and to seal lymphatics, high frequency currents may be used with safety in performing a biopsy on a malignant growth or in resecting piece-meal an otherwise inaccessible malignant growth.

Electrosurgery has been used in a large variety of conditions. On the one hand, it may be used in the office to destroy warts or moles and, on the other, it may be used in the operating room in the most difficult brain operations or through special cystoscopic electrodes in intravesical operations. It may be used in any region of the body—on the skin, in the nose or mouth, on the thyroid or breast, in urology, in gynecology, in proctology, and in brain surgery.

By those who are most familiar with this type of operation, electrosurgery is recommended neither as a substitute for the scalpel nor as a means of attack on tumors which will replace radium and x-ray. It is considered rather as a means of treatment to be used along with operative surgery and radiation. These three methods of surgical treatment are like three partners, each of whom has a definite duty to perform in the course of a day's work. Undoubtedly, electrosurgery broadens the field of surgery and opens up to hopeful treatment many conditions which in the past have been considered inoperable. Doctors Kelly and Ward have had an extensive experience in all three of these methods of treatment and in their book they have attempted to point out the various fields in which each measure is indicated.

The numerous photographic illustrations and excellent drawings by William P. Didusch add much to the vividness of the written descriptions of the methods of utilizing high frequency currents.

C. K. W.

The Practical Treatment of Skin Diseases, With Special Reference to Technique, by Edward Ahlswede, M.D., formerly Assistant Physician, University Skin Department, Direction of Professor Unna, Eppendorf Hospital, Hamburg; Assistant Physician Clinic and Research Laboratory, Direction of Professor Unna, Hamburg; Assistant Physician, Institute of Physical Therapy, Direction of O. Ahlswede, M.D., Hamburg. 735 pages with 77 illustrations. Paul B. Hoeber, Inc., publishers. New York, 1932. Cloth. \$12.00.

This book is devoted entirely to the practical treatment of skin diseases. The methods described are those used by the eminent dermatologist, Professor P. G. Unna, and are the ones in vogue in the Central European countries, though material has been drawn also from dermatologic clinics throughout Europe, America, Japan, Dutch East Indies, Malay Settlements, Egypt and other countries.

The first part of the book deals with the various dermatologic remedies—local remedies, internal medication, glandular therapy, diet, physiotherapy, x-ray and radium; the effects of each and the technique of their use. The main section deals with the treatment of the various dermatologic conditions. The material is arranged alphabetically. Under each title there is a brief description of the disease, its etiology, the essential points in diagnosis, then a synopsis of treatment followed by a detailed description of the drugs and other measures used and the indications for using each.

The appendix contains a brief summary of the methods of treatment of the skin diseases and of non-venereal genital lesions, and a formulary of the prescriptions used by Professor Unna.

The usual text-book of dermatology is devoted chiefly to the diagnosis of skin diseases and is therefore profusely illustrated with photographs of various skin lesions. This book of Ahlswede's deals almost exclusively with treatment of skin diseases and on that account does not contain pictures of skin lesions. The illustrations of the apparatus used for physiotherapy and for diagnosis are excellent. The material contained in this book is up to date and complete and the materials used in the various prescriptions listed is available in most American cities of any size.

C. K. W.

Manual of Clinical and Laboratory Technic: By Hiram B. Weiss, A.B., M.D., F.A.C.P., Associate Professor of Medicine, College of Medicine, University of Cincinnati, Cincinnati, Ohio; and Raphael Isaacs, A.M., M.D., F.A.C.P.; Associate Professor of Medicine, Assistant Director of the Thomas Henry Simpson Memorial Institute for Medical Research, University of Michigan, Ann Arbor, Mich. Fourth Edition, reset. 117 pages, with Diet Table. Philadelphia and London: W. B. Saunders Company, 1932. Cloth, \$1.50 net.

This little book is intended as a guide for the standardization of routine hospital work. It contains a brief outline for routine histories and physical examinations, tables of normal heights and weights, brief descriptions of the accepted laboratory procedures for the examination of blood, urine, gastric contents, stools, sputum, and spinal fluid, function tests for the liver, kidneys, lungs, and gastro-intestinal tract, methods of performing vaccination and susceptibility tests, and a rather complete table of food values for the convenience of determining diabetic diets. The book should prove as convenient in the doctor's office as in a hospital.

C. K. W.

The Expectant Mother's Handbook: By Frederick C. Irving, A.B., M.D., Professor of Obstetrics, Harvard Medical School; Visiting Obstetrician Boston Lying-in Hospital. 200 pages, illustrated. Houghton Mifflin Company, Boston and New York. 1932. Cloth. \$1.75.

This book is written with two objects—to acquaint the patient with facts of pregnancy and child-birth and to dispel certain untruths and superstitions related to her by ignorant relatives and friends. It is written in language that is very simple and easily understood, yet lacks nothing in scientific accuracy. The book contains an answer to practically every question which a pregnant woman might ask her physician and the author has shown unusual understanding both of the physician and his patient in that he has on several occasions explained that the determination of the date of confinement, the diagnosis of pregnancy in the early months and the determination of the sex of the child before birth cannot be made with absolute accuracy. This is so accurately explained that the patient who has read the book is unlikely to blame her physician for errors over which he has no control.

The book is an ideal manual to be placed in the hands of all pregnant women, in which capacity it will be a source of considerable help to the attending physician. Nothing essential has been left out of the book and with the exception of a chapter devoted to the choice of anesthesia and to a description of operative deliveries, nothing has been included which would have been better left out.

C. K. W.

Truth About Medicines

Average Optimum Dosage of Cod Liver Oil.—The Council on Pharmacy and Chemistry reports that at present the recommended dosages of cod liver oil differ widely. In part, the varying effects that have been reported may no doubt be explained by the unlike activity of different brands of cod liver oil. Thus, while the U. S. Pharmacopoeia permits the claim that the product is biologically standardized if it contains 50 vitamin A units per gram as determined by the method given, certain brands now in New and Nonofficial Remedies guarantee a potency of 1,000 U. S. P. vitamin A units per gram, and none contains less than 500 units. The vitamin D potency of cod liver oil is probably still more uncertain, since no official method of assay has been adopted; hence it is most difficult to compare different brands of cod liver oil even if the vitamin D potency and method of assay are declared.—*Jour. A. M. A.*, January 23, 1932, p. 316.

THE JOURNAL

OF

The Medical Association of The State of Alabama

Published Under the Auspices of the Board of Censors

Vol. 2, No. 2

Montgomery, Ala.

August 1932

THE DIFFERENTIAL DIAGNOSIS OF RECTAL CANCER*

CURTICE ROSSER, M. D., F. A. C. S.

Professor of Proctology, Baylor University Dept.
of Medicine, Dallas, Texas

A few medical axioms have become so trite by repetition as to lose their efficiency without lessening their verity. The physician who with difficulty stifles a yawn when catharsis in undiagnosed abdominal pain or possible obstruction is discussed may leave the assembly to prescribe magnesium sulphate to the next alimentarily unhappy patient seen, long habit inducing both the yawn and the prescription.

The proctologist well knows that his listener oftener than not is as cognizant of the old adages "he who fails to put his finger in the rectum will later find he has put his foot in it" and "consultation consists in inserting the finger in the rectum" as is he who gravely expounds them, but the expounder has a helpless feeling that his listener smiles tolerantly and in practice continues to make his own diagnosis by external inspection when rectal symptoms are adduced.

Only considerations which impress as of profound importance have lent me courage to discuss with you the subject of rectal malignancy, to insist with Dudley Smith that rectal bleeding indicates cancer until neoplasm is eliminated by the most thorough diagnostic methods and that no minor operative procedure should be undertaken in this region until additional or alternate pathology is ruled out.

Rectal cancer, untreated, has a one hundred per cent mortality, and now makes up

five per cent of the total cancer deaths. Effective surgical treatment is necessarily radical in scope and entailing as it does an artificial anus far reaching in its effect on the patient's after life.

The responsibility which accompanies the final decision that any given case is or is not malignant is grave since an error on either side is disastrous to both patient and surgeon.

To confirm the necessity for continued exposition of this thesis before medical bodies, it might interest you to know that every case of rectal cancer admitted to my service in Baylor University Hospital in 1931 came with a history of operative or injection treatment in the near past as the result of attribution of the cancer symptoms to some minor lesion present or imagined. Among the cases was one sixty-year-old physician who was subjected to a hemorrhoidectomy in June, treated intensively for amebic dysentery in July and August, and in September found to have a large easily palpated rectal neoplasm. (Figure 1.) A Jewish housewife because of bleeding and sacral pain was operated for an anal fissure two months before her cancer was detected. The remainder of the cases, one of whom had an ampulla completely filled with a malignant villous adenoma and another showing marked cachexia, had received injections for presumed hemorrhoids within recent weeks or months, not all having been under the care of irregulars.

A brief consideration of the symptoms which mark the early, intermediate, and advanced stages of this disease and careful consideration of possible puzzling diagnostic similarities in benign anorectal pathologies may be regarded as opportune.

*Read before the Association, in annual session, Mobile, April 21, 1932.

While the definite etiology of cancer is hidden to us it is known that anal and rectal neoplasms tend to occur more frequently under certain predisposing conditions. Yoemans¹ and many others have indicated that the ordinary adenomatous polyp, par-



Figure 1. Typical Adenocarcinoma of Rectum mistaken for amebic ulcer after hemorrhoids had been removed without relief of symptoms.

ticularly when multiple, is a precancerous lesion and Barger² and others have emphasized the high incidence of malignancy in connection with chronic colitis. While the fact that chronic irritation in the anal canal due to the long continued presence of the common anal pathologies may induce malignant change has not been universally accepted, it is my opinion that unsound tissues in this region have the same provocative reaction in susceptible subjects as do similar tissues in other parts of the body. In support of this contention I³ recently reviewed before the American Medical Association a series of 13 cases of cancer in the anal canal occurring on our rectal service, in 12 of which benign anal pathology was present before the onset of malignancy. Seven cases were reported in which anal fistula had preceded the lesion varying periods of years, adenocarcinoma being the usual type of cancer found in the tracts.

Four cases were seen giving a history of bleeding and protruding hemorrhoids for periods varying from ten to thirty years. In one a squamous-celled malignant ulcer was found lying between two ancient internal piles; in another a firm mass the size of a pigeon's egg lying in a prolapsing internal-external hemorrhoid was found to contain epithelial cancer; in two other cases the hemorrhoids had been completely replaced by malignancy. In the twelfth case the gross specimen revealed the presence of chronic cryptitis and papillitis in association with a new growth in the upper anal canal. I was able to find reports of eighteen similar sequences in the general literature.

The diagnosis of rectal cancer is therefore complicated by the constant necessity of eliminating the presence of malignant degeneration in ancient anal lesions and in rectal polypi and the ulcers of colitis, and the *earliest* symptoms of anal and rectal carcinoma are the presence of such predisposing pathology plus certain additional signs, never pathognomonic in themselves, often vague, but sufficient to suggest to the alert physician the advisability of a careful and complete rectal examination.

Probably the most constant early sign is a sense of discomfort in the rectum, not relieved by defecation. Bleeding may not be severe, and bleeding may arise from other causes, but all rectal cancers bleed. Pain is usually present in anal cancer early, rarely in ampullary cancer, although referred pain to the sympathetic ganglion of the sacrum or lower abdomen is sometimes seen. Constipation or matinal diarrhea are significant when they appear.

In the intermediate stage of the development of the neoplasm, the usual symptoms are *constipation*, or alternate constipation and diarrhea, *discharge* of blood, alone or mixed with mucus or pus, *pain* (in cancer at or near the anus), and moderate *weight loss*. The textbook syndrome of weight loss, cachexia, obstruction and abdominal distension, which accompanies final stages, are of no practical diagnostic import.

In admissions to Baylor Hospital, the growth was found to be located in the ampulla most often, the rectosigmoid juncture half as frequently, and the anal canal one-fourth as frequently as in the ampulla.

As I pointed out in 1925⁴ there are characteristic localizing symptoms for each of these localities, the pain which is universal in anal malignancy, the chronic increasing constipation with mild constant hemorrhage in cancers of the ampulla, and the intermittent gushes of blood associated with intermittent attacks of obstruction in rectosigmoid growths.

The simple digital examination which caution indicates when any definite anorectal symptoms are elicited will suggest the presence of tumor in some seventy per cent of the cases, all except those in the upper rectum and sigmoid. Visualization of the tumor is, however, essential in all cases and for reasons which will be given later, biopsy is an extremely important step in a number of instances.

The typical malignant ulcer of the lower bowel when palpated and visualized presents the following characteristics: it is a single lesion. It is indurated. Its surface presents a crater-like depression which bleeds easily. The mucosa immediately adjacent to the firm everted edge is normal in every respect (Buie).

Even in the presence of an honest attempt to make an accurate and complete diagnosis cases occur which by reason of similarity of syndrome or some freak of appearance or symptomatology present a diagnostic puzzle. It was Richard Wiseman, that fine old British barber-surgeon of the court of Charles II, who said in his "Chirurgicall Treatises" which included reports of all his cases, "I have done it faithfully and thought it no disgrace to let the world see where I failed of success there being more instructiveness often in an unfortunate case than in a fortunate one and more ingenuity in confessing such misfortunes". Obeying this seventeenth century injunction, it is my plan to illustrate my thesis with cases taken from our own files in which error or near errors were made.

The diagnosis of benign lesions as cancer may result from profuse rectal bleeding, from the presence of benign tumor, from the discovery of indurated ulcers due to rectitis, or from the presence of benign strictures.

On the other hand, cancers may be erroneously considered benign when engrafted on previously benign lesions, when present

in association with lesions which are actually benign, or from resemblance to benign lesions.

In the first group may be presented the following examples:

Case No. 8274L—Mr. S. I. S., a white farmer, 40, was referred from a nearby city with a positive diagnosis of cancer because of the presence of several indurated anal masses, together with a discharge of pus and blood. The history of previous injection treatments for piles explained the tumors, which are characteristic when palpated and which were multiple rather than single. The discovery of a small blind fistula accounted for the discharge.

Case No. 8110M—Mr. J. C. R., a white man of 58, presented the same type of problem but more complex. He had a single mass one inch above sphincter, which was indurated, partially necrotic on surface, partially covered by normal mucous membrane. History of injections were present. A colostomy was done and a frozen section afterwards revealed the fact that the mass, originally a polyp, was a fixed oil tumor; its hypertrophy, induration and necrosis due to injection of chemicals containing oil six months before.

Case No. 9248L—Judge W. A., white man of 76, was seen in consultation. He had entered Baylor Hospital with a fifteen-stool diarrhea for four months, a weight loss of fifty pounds, and the presence of blood and pus in the stools. The laboratory findings, including roentgen ray, were negative. I found a large calloused ulcer in the lower sigmoid and suggested malignancy, the diagnosis being concurred in by a competent gastroenterologist. Colostomy was refused, and at autopsy the ulcer was found to be an indurated and calloused benign lesion associated with numerous small ulcers found higher in the sigmoid and a few behind one of the rectal valves which had been overlooked.

Benign inflammatory strictures may present the problem of weight loss, discharge of blood and pus, with annular ulcerated tumor. The simplest diagnostic point in case of doubt is the colon ray, which shows a distinct narrowing and straightening of the entire rectum due to perirectal fibrosis even in short strictures. (Figure 2.)

In a recent analysis of 100 consecutive cases of benign stricture reported before our own State society⁵ I found that 67% were of the type best termed proctitis obliterans seen commonly in the negro female. Because of the comparative rarity of cancer in the negro and the association of pronounced inflammatory changes in this form of stenosis there is little reason to be led astray diagnostically. 12% of the same

series however were obstructions following the injection of oil-containing solutions in the treatment of hemorrhoids and here a diagnostic puzzle results which I am satisfied is much more frequently the source of

viously benign lesions or associated with benign lesions.

I recently saw the following illustrative example of concurrent benign and malignant pathology:



Figure 2. Annular Inflammatory Stricture (proctitis obliterans) demonstrating concurrent perirectal fibrosis of diagnostic value.

ill-advised surgery than the literature would indicate. Concomitant rectal ulceration is not usual and the dense annular more or less nodular new growth which may be a sequella of this procedure is deceptive indeed to the examining finger. Two of these cases came to Baylor Hospital with a positive diagnosis of cancer, and in a third a biopsy was necessary to establish its absence. In the *Journal of the American Medical Association* a year ago⁶, attention was called to the distinguishing microscopic appearance of these eleomata or oil tumors, coalescence of which is responsible for chemical stricture. (Figure 3.)

Cancers of the rectum are frequently diagnosed as benign when engrafted on pre-

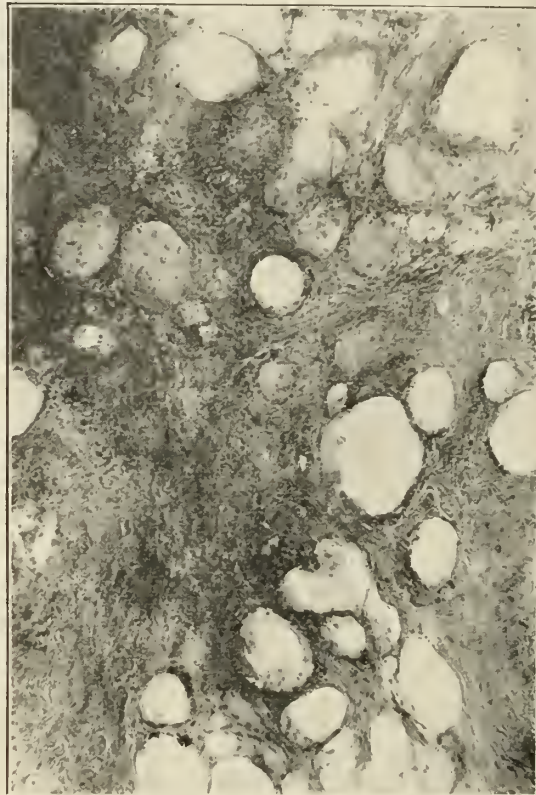


Figure 3. Typical microscopic appearance seen in Eleomata (Oil Tumor) in chemical rectal stricture. The apparently empty spaces contain oil.

Case No. 4808S—Mr. J. R. K., a white male of 51 came to Baylor Hospital with a history of diarrhea, passage of blood and pus for one year. Proctoscopy revealed a multiple polyposis. Four polypi were removed with a snare and radio knife current for biopsy, the result showing all innocent. An exploratory was done and the abdominal glands were found to contain metastatic cancer from one or more of the polypi which had become malignant.

The following case reports exemplify the difficulty in eliminating cancer implanted on benign pathology:

Case No. 6030P—M. C. T., a negro male of 57, had history of fistula persistent for fifteen years. A number of sections were made on Jan. 22, 1929 which demonstrated Langhan's giant cells. Tissue removed three months later was found to contain adenocarcinoma in addition to the tuberculous inflammation. (Path. No. 29-106 and No. 29-641.)

Case No. 6984J—Mrs. M. W., a white woman of 55, was referred to me from Oklahoma with a di-

agnosis of hemorrhoids and a history of hemorrhage, prolapsing piles and rectal discomfort for ten years. Rectal pain had been somewhat severe for six months. A mass the size of a pecan was palpated in one of the piles, removed with the cautery, and frozen section revealed an epidermoid carcinoma. (Illustration No. 4.)

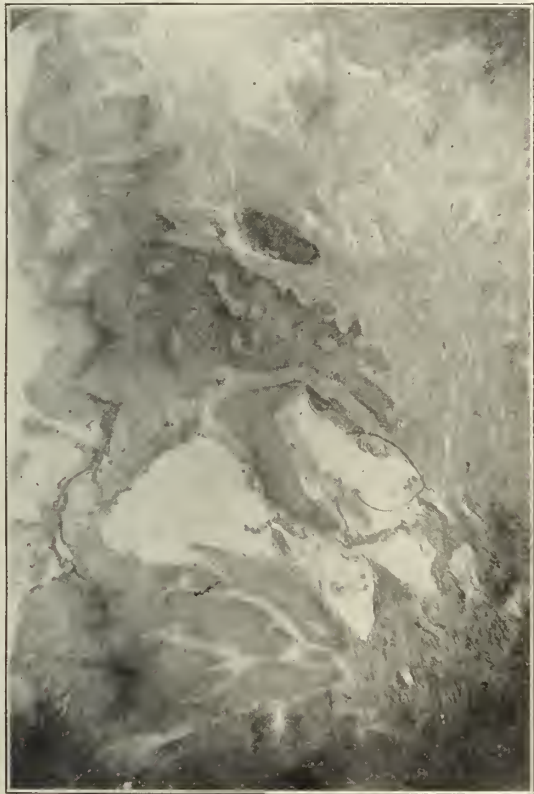


Figure 4. Epithelioma occurring in long standing interno-external hemorrhoids. Case No. 6984J.

Case No. 5554G—Mr. J. F. D., a white man of 48, had a fissure operation at Baylor Hospital in 1920. During the next five years another surgeon operated twice for recurrence of the anal ulcer, which consistently refused to heal. No tissue examinations were made. After six months additional local treatment, the patient went to a northern surgeon who found an anal cancer.

Case No. 4643K—Mrs. E. M. W., the patient, presented herself with the story of prolapsing piles for many years, which ceased to bleed ten years ago. Three weeks ago pain and bleeding appeared. After two visits to her physician at which she received ointments she insisted on an examination and was sent to Dallas. An indurated ulcer was found adjacent to an internal pile, frozen section revealed squamous-cell (not adenomatous) cancer, suggesting anal origin. Resection of the rectum was done immediately, but the patient died of metastasis two years later.

Case No. 2428N—Mrs. C. A. L., a white woman of 53, referred to me with diagnosis of cancer by a

local surgeon three months after an exploratory for sigmoidal pain and hemorrhage had revealed a mass in the sigmoid clinically resembling diverticulitis. Colostomy had been done but hemorrhage continued. Proctoscopy from above through the distal colostomy opening discovered a bleeding mass in the sigmoid with broad base and spongy consistency. Biopsy indicated that the growth was a benign villous papilloma, and for this reason resection was delayed four months. When the rectum was removed the mass was found to have a malignant base.

I must confess to a change of front on the question of biopsy of suspected or even known malignancy of the lower bowel. Some years ago I was of the opinion that a well qualified proctologist should be prepared to definitely establish the presence or absence of cancer after palpation and visualization of the mass and that biopsy was a somewhat dangerous procedure seldom indicated. The first premise still holds in the majority of cases, the second I have abandoned for several reasons. The perfection of a number of instruments for removing tissue through the proctoscope with minimum stimulus to the growth, the best of which is the radio knife, and the necessity for determining whether the growth be of the squamous cell or adenocarcinomatous variety and the degree of malignancy present in either case are powerful arguments for extensive use of the procedure. The recent improvement of radium therapy technique which has been stressed by Sir Charles Gordon Watson of London makes it highly necessary to carry diagnosis to this ultimate point to determine radiosensitivity as well as malignancy, in order that the optimum therapeutic course may be followed.

710 Medical Arts Building.

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CHRONIC ARTHRITIS*

FROM THE ROENTGENOLOGIST'S
STANDPOINTJESSE P. CHAPMAN, M. D.
Birmingham

Chronic arthritis is a disease of great antiquity. Although it has been spoken of as the disease par excellence of ancient Egypt, it is reported that the present inhabitants of Nubia are also singularly affected as were their forefathers. However, this disease is universal in its distribution, affecting all classes, races and nationalities alike. By reason of its extensive occurrence, the severe physical disability and the tremendous economic burdens imposed by it, arthritis remains one of the unconquered major problems of modern medicine. Encouragement is to be had in the increasing interest in the study of arthritis by certain individuals and groups of medical investigators, with the hope that recent results obtained may prove a boon to disabled humanity.

A rational approach to the study of an arthritic patient is to consider the disease as a constitutional problem. The individual must be given a most careful diagnostic survey, determining his metabolic state, discovering every source of infection, observing the structure changes involved, and also evaluating the mechanical status of the patient before instituting therapeutic measures. The relation of the roentgenologist to this problem lies in his capacity as a true medical consultant, and not as a bone photographer. As he searches for foci of infection, it is well to keep in mind the relative order of frequency of infectious processes, which are as follows: teeth, in about 50 per cent of cases; tonsils and sinuses in 30 per cent, prostate in 12 per cent, gallbladder and gastro-intestinal tract in 10 per cent; bronchial conditions in 2 per cent, with several of these factors overlapping. Dental radiograms older than one year should not be relied upon as revealing the present alveolar condition. Representative joints involved should be studied for diagnostic structural changes.

CLASSIFICATION

A criterion for evaluating the joint and bone changes must be established. In the

modern conception of the disease two characteristic groups are described among the non-tuberculous and non-specific types of joint diseases. These are chronic rheumatoid arthritis and chronic osteoarthritis. To the first group belong such types as infectious, atrophic or proliferative arthritis, and arthritis deformans. In the second class are found hypertrophic and the degenerative arthritis. These two types have been described by Goldthwaite, Nicholls and Richardson, and Fisher, under their own classifications.

CHRONIC RHEUMATOID ARTHRITIS

Chronic rheumatoid arthritis is essentially inflammatory in nature, affecting the synovial membrane and cartilage, beginning as a proliferation of the synovium, soon spreading over the joint surface as a highly vascular membrane, breaking through the superficial layers of cartilage and replacing the cartilage with fibrous tissue, which ultimately forms an ankylosis. Periarticular structures are involved through infiltration, producing the characteristic spindle-shaped joint. The radiologic examination of the rheumatoid joint reveals erosion of cartilage, narrowing of joint space, irregularities of articular surfaces, areas of decalcification of adjacent bone structures and later atrophy of the diaphysis from disuse. It should be of interest to radiologists also to understand the cause of these changes. Are they due to an allergic reaction from some remote sensitizing focus of infection, vascular changes, toxic, chemical reactions, or definite bacterial localization in the joint cavity?

Llewellyn has advocated the allergic reaction and Klinge's experimental study leads to the same conclusions. Rowntree and Adson believe strongly that an ischemia is a factor in the joint changes, since a marked benefit is observed in the improved vascular state of the joint following a ganglionectomy. It has been thought, however, that infection plays a most conspicuous role, and the reported results of the clinical, bacteriologic and pathologic studies of Cecil, Nicholls, and Stainsby become convincing that the disease is a streptococcal infection. They have recovered a streptococcus of typical strain constantly from the focus of infection, from the blood stream in 62.3 per cent of arthritic cases

*Read before the Association in annual session, Mobile, April 21, 1932.

studied, and from joint cultures in 67.3 per cent of the rheumatic joints. A high agglutination of typical strains of streptococci has been found in the sera in 94 per cent of patients with rheumatoid arthritis. Animal inoculations with infectious materials from patients have reproduced characteristic joint changes in rabbits. Progress has been made in the etiologic study of rheumatoid processes, but it remains to be seen if satisfactory therapeutic application of these findings will be accomplished.

CHRONIC OSTEOARTHRITIS

Chronic osteoarthritis is considered non-infectious in origin. Nicholls and Richardson, as well as Fisher, describe this type as degenerative and hypertrophic in reaction. The mid-articular cartilage becomes ridged and cracked, with degeneration of the cartilage, due to a poor blood supply and bone is seen through the irregular pitted cartilage. Peripheral cartilage undergoes hyperplastic changes, with ossification, giving rise to osteophytes that are characteristic of this type of arthritis. The synovial changes are essentially limited to proliferation of the villi. The hypertrophied villi often form chondromata, or become detached as loose joint bodies, associated occasionally with recurring attacks of synovitis. The crunching sound in joint manipulations is due to villous masses rubbing together. Bony or firm ankylosis is uncommon in this type of arthritis, but locking of osteophytes frequently immobilizes joints. Muscle atrophy is very rare, with less marked deformity than in the rheumatoid variety. The x-ray findings in such patients, usually over forty years of age, are the presence of spurs or lipping on the margins of articular surfaces or the vertebral bodies. The joint surfaces and adjacent bones remain unaltered as a rule, and rarely ever is fluid found in joint cavities except from traumatism.

Since osteoarthritis is considered non-infectious in origin, the cause for such interesting degeneration of cartilage has been sought for. Fisher considers this disease as a physiologic response to some form of irritation, either mechanical or chemical, and concludes that "trauma causes a degeneration of the central cartilage, but the marginal cartilage shows proliferation on account of possessing a better blood sup-

ply." Key has determined the relation of trauma to experimental osteoarthritis by destroying a portion of knee cartilage with chemicals, interfering with joint blood supply, removing a portion of patella cartilage, producing unequal weight-bearing pressure on joints, and in each instance the characteristic changes of an osteoarthritis were observed. This proves the protective function of cartilage. Interesting results were obtained by Klinge's experimental studies of arthritis, in which rabbits were sensitized intradermally to horse serum, followed by injections of from $\frac{1}{4}$ to 1 cc. of horse serum into one knee joint. This produced an acute inflammatory reaction resembling the acute rheumatoid arthritis, but later developed typical hypertrophic changes, with true spur formation. The focal infection with its general sensitization may through vascular transference deposit allergic sterile serum into joints with the production of joint changes indistinguishable from the clinical hypertrophic arthritis in man. Trauma, however, is considered the primary factor in the production of these joints changes, as is seen from occupational strains (locomotive engineers, typists, toe dancers), faulty weight bearing from flat feet, obesity, particularly during menopause, and mechanical inequalities. The Charcot joint, in addition to specific bone degeneration, may be essentially an osteoarthritis due to continuous traumatism from loss of joint sensation through cord-nerve interference.

CHRONIC SPONDYLITIS

The arthritic problem of the spine is not so simple as in other joints. Both of the types described may be associated. The first class of spine abnormalities recognized is chronic spondylitis deformans—or spondylitis ossificans ligamentosa, the Marie-Strumpell type, affecting the anterior common ligament of the spine. The interspinous ligaments become ossified, and the entire spine ultimately becomes rigid and "poker like" by the ossification of the intervertebral disks. Typhoid spine is of this type, and the whole process is distinctly infectious in origin. The radiologic appearance of such spines is in keeping with other infectious processes in joints. The second type is spondylitis muscularis, the Von Bechterew type, which contains atrophy of

the intervertebral disks, impairment of muscle power and increasing dorsal curvature, characteristic of elderly people. In these cases the x-ray findings are negative as compared to the extensive clinical condition observed. The third type, or spondylitis osteoarthritis, is quite frequently seen. The spine is often the point of selection for osteophytic processes in older persons. Allard of the Mayo Clinic observed osteoarthritis of the spine in 67 per cent of men and 40 per cent of women past 50 years of age, who were examined for urinary tract conditions. The x-ray evidence is characteristic of the hypertrophic changes elsewhere, with spur formation on articular facets, vertebral bodies, crests of the ilia, acetabulum, etc. Localized infectious processes of the vertebral articulations with spur formation may often be seen following traumatism. Evidence of changes about the sacro-iliac joints may be negligible itself but very suggestive if there is found calcification of the lumbosacral ligaments. Bursal deposits about the joints, painful sesamoid bones, periosteal irritations, osteomyelitis, neoplasms, calcaneal osteophytes, and the like, may produce symptoms not distinguishable from primary arthritis processes. These conditions the radiogram, properly interpreted, will reveal.

In conclusion permit me to emphasize: (1) the distinctiveness of these two types of non-tuberculous arthritis, which can be easily identified by careful radiologic examination; (2) that the radiologist by a thorough understanding of the etiology and pathologic structural changes will be able to better qualify as a true medical consultant; and (3) that he should endeavor to cooperate in every way with the patient and his medical advisers in this diagnostic survey of the unfortunate arthritic sufferer.

820 Woodward Bldg.

ABERRANT ENDOMETRIUM*

LUTHER L. HILL, JR., B. S., M. D., M. S.
Visiting Surgeon, St. Margaret's Hospital
Montgomery

When tissue having an appearance similar to uterine endometrium or tubal endosalpinx is found out of its normal location it is called aberrant endometrium. The

term is used to designate a large number of conditions including the chocolate cysts of Sampson and the various adenomyomas with glandular tissue resembling endometrium.

According to Graves¹ our first knowledge of endometriosis dates back to 1860 when von Rokitansky recognized an adenomyoma as a definite entity. From that time until about 1920 very little attention was paid to the condition. The literature holds only an occasional case report. In 1921 Sampson² produced the first of a large series of very interesting and instructive papers on endometriosis. He is largely responsible for introducing the subject to the general medical public.

Aberrant endometrium is a not infrequent condition. The reported incidence in a group of gynecologic patients depends upon the watchfulness of the individual surgeon. This is due to the fact that in many patients the lesions are so small that they are overlooked unless special effort is made to find them. Sampson reports the greatest incidence with about one case of endometriosis in four abdominal operations for pelvic disease. In a series the author³ reviewed, one hundred and thirty-five instances of endometriosis were found in 1100 operations for pelvic disease, or about one case of endometriosis in eight patients. Very often in this series the diagnosis was made by microscopic examination of the tissue removed at operation, the endometriosis not being recognizable grossly. In thirty-five of the one hundred and thirty-five patients the aberrant endometrium was sufficiently extensive to produce some of the symptoms. In the same series, cystadenomas of the ovary were found in forty patients.

There are at present two important theories for the origin of aberrant endometrium. The simplest and most popular is that outlined by Sampson⁴. He believes that the aberrant endometrium arises from the uterine endometrium or tubal endosalpinx. His theory is that small portions of the uterine endometrium set free during a normal catamenia or following curettage make their way through the fallopian tube in a retrograde fashion and fall free into the peritoneal cavity. These bits begin to grow and infiltrate the organ on which they are

*Read before the Association, in annual session, Mobile, April 20, 1932.

deposited. Sampson says that regurgitation through the tubes is assisted by conditions causing an obstruction to the normal exit of the menstrual blood. The incidence of endometriosis has been reported greater in patients with fibroids, pelvic infections and displacements of the uterus—all of which might tend to obstruct the normal menstrual flow.

Sampson calls attention to the wonderful regenerative powers of the uterine endometrium demonstrated after each menstrual period. He also recalls the invasive tendencies of the endometrium as demonstrated by the uterine and tubal adenomyomas. He further calls attention to the large chocolate cysts frequently found in the pelvis which represent menstruation into the endometrial cysts.

Finally Sampson beautifully demonstrates many small implantation cysts scattered over the entire pelvic cavity which have resulted from implantation of small bits of endometrial tissue after rupture of one of the large mother hemorrhagic or endometrial cysts. He compares the seeding of endometrial tissue following rupture of a chocolate cyst to the seeding of an ovarian carcinoma.

Novak⁵ presents some very plausible objections to this theory. He believes the endometrial tissue thrown off during catamenia is degenerating and incapable of growth even on a suitable field. Novak says that it would be practically impossible for endometrium of any appreciable size to make its way through the small lumen of the fallopian tube. He calls attention to the fact that the uterine portion of the fallopian tube measures only .5-1 mm. (.08-.04 inch) in diameter.

Blood has been reported at the fimbriated end of the fallopian tubes in patients operated upon during the normal menstrual period by Sampson, Danford⁶, Curtiss⁶ and others. Blood has been reported at the fimbriated end of the fallopian tube, following curettage, by Goodall⁶, Heany⁶ and others. Novak closely examined thirteen women operated upon during the catamenia and was unable to find evidence of regurgitation in one.

Novak⁵ champions the coelomic theory which signifies that the ectopic endometrium develops in one of two ways; (1) from

coelomic rests in various parts of the pelvis or (2) from the peritoneum of the pelvis, germinal epithelium or other epithelium of the ovary. These elements all arise from the same tissue giving origin to the uterine endometrium. Novak believes that by some form of stimulation these epithelial elements may be made to differentiate into tissue resembling the true endometrium.

It is more than likely that both theories are correct and aberrant endometrium has its origin in at least two ways.

Ectopic endometrium has been found on and infiltrating all of the organs of the pelvis. It has never been found in the abdominal cavity above the pelvis. The ovary is the most common location, but the appendix, cecum, sigmoid colon, rectum, uterus and bladder are not infrequently involved. It is sometimes found on the parietal peritoneum of the pelvis. Ectopic endometrium has been reported many times in the wounds of former operations, usually for pelvic conditions, but in several instances in wounds of simple appendectomies. The endometrial cysts are usually but not necessarily filled with dark brown chocolate colored fluid—hence their name, chocolate cysts. They sometimes contain a clear colorless fluid. The pathology of tissue identified as aberrant endometrium varies from single cysts lined with columnar ciliated epithelium to the typical menstruating endometrial tissue, rapidly growing and infiltrating.

There are no constant characteristic symptoms of aberrant endometrium. When the condition is far advanced there is a fairly definite picture, but early, unless the cysts can be seen, it is very difficult to make a positive diagnosis. Almost all of the gynecologic symptoms have been attributed to endometriosis but as this condition is so frequently complicated with other pelvic pathology it is likely that the symptoms are due, at least partly, to the associated pathology.

The most characteristic symptom is pain over the growths during the catamenia, but this is by no means always present. If the cysts can be recognized in the rectovaginal septum, operative scar or round ligament in the groin they present a fairly characteristic appearance. They are usually multiple and have a dark bluish color. If the

cysts swell, becoming painful and tender, during the menstrual period the diagnosis is assured.

If the pelvic endometriosis is extensive there are many fibrous adhesions which give rise to symptoms by distorting and fixing the pelvic organs.

The diagnosis is made in the majority of instances at the time of operation often when the condition was not suspected previously. The larger chocolate, hemorrhagic or endometrial cysts are easily recognized when they are brought to view. It is important to differentiate aberrant endometrium from carcinoma of the bowel and chronic pelvic infection. The distortion produced by the adhesions of endometriosis can easily confuse the pictures.

The treatment depends upon the size and position of the growths. If there are only a few small superficial cysts they can be wiped away with a sponge or destroyed with a cautery. If the lesion is more extensive an attempt should be made if possible to resect the growth. If the entire growth cannot be removed it is better to resort to oophorectomy because this procedure insures a retrogression of this tissue.

Something here should be said of the prophylactic treatment. It is more than likely that endometriosis arises in some instances from regurgitation through the fallopian tube. For this reason care should be taken in the manipulation of the uterus at examination or operation and especially following a curettage or during and after the catamenia. Sampson has demonstrated that blood can be expressed from the fimbriated end of the fallopian tube after a curettage by pressure on the uterus. Injection of various substances into the uterus and fallopian tube should not be done following a curettage or after the catamenia.

The prognosis of aberrant endometrium with proper treatment is good. When the tissue is completely removed it probably will not recur and if oophorectomy is resorted to permanent retrocession is assured.

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DISCUSSION

Dr. Gilbert F. Douglas (Birmingham): In diagnosis, dysmenorrhea that comes on very suddenly must claim our attention. I want to mention a case in this connection. I had a patient about thirty-nine years of age who had been in perfect health up until that time. About four months prior to the time she came to me, she began having excruciating pains at the time of menstruation, the pain grew worse and was so marked when she came in she was ready to have anything done that afforded any hope of relief. She had had some little disturbances with her menstruation other than the pain. On examination there was a mass in the region of the left ovary which I thought was a cystic ovary. I didn't suspect a chocolate cyst. At operation there was found a chocolate cyst the size of your fist that was removed and since that time, which was about three months ago, she has been perfectly comfortable.

Dr. Hill (closing): I want to express my appreciation to Dr. Douglas for his discussion of my paper.

I have one point more I would like to bring out and that is that it requires only a very small amount of endometrial tissue to be transplanted to another location and begin its growth just as new colonies of carcinoma arise from single cells or small groups of cells in the seeding of an ovarian malignancy. This is important to bear in mind in all gynecologic operations.

Casler reported actual menstruation from uterine-like endometrium in an ovary. A panhysterectomy and unilateral salpingo-oophorectomy was done for adenomyoma of the uterus. Drainage was made through the vagina. Subsequent menstruation occurred through the sinus in the vagina caused by the drainage tube. A second operation was done and typical uterine endometrium found to have developed in the remaining ovary. Whether the endometrium was transplanted onto the surface of the remaining ovary at the time of the first operation cannot be said. This possibility must at least be strongly suspected.

Aberrant endometrium has been very frequently reported in the wound of former operations, usually gynecologic operations. The patient complains

of pain and tenderness in the scar which is very much worse during the menstrual period. In this connection I have only recently heard of a patient who came to the doctor complaining of a sinus from an old operative scar. The scar would become swollen and tender during each menstrual period and there was a muco-serous discharge present at this time.

TETRACHLORETHYLENE IN THE TREATMENT OF HOOKWORM*

MERLE E. SMITH, B. A., B. S., M. D.
America, Ala.

In 1925, Hall and Shillinger¹ suggested that tetrachlorethylene was a suitable anthelmintic for administration to man because of its similarity to carbon tetrachloride and its lowered toxicity. Their results were confirmed by extensive animal experimentation^{2, 3, 4, 5, 6}, the drug being given to puppies, dogs, foxes, cats, sheep, horses and chickens.

Lamson, Robbins, and Ward⁷ made an exhaustive study of the pathologic and toxicologic actions upon dogs, cats, rabbits and mice. They found even with massive doses (275 cc.) and in the presence of fat in the gastro-intestinal tract that only occasionally did any toxic symptoms appear. At autopsy no organic lesions were found. They concluded that this drug may be given with greater safety than either oil of chenopodium or carbon tetrachloride.

Over 200 cases in which tetrachlorethylene was given have been collected from the literature and personal communications by Sharpe⁸. He found that toxic symptoms appeared in 11.4 per cent of a series of 96 treatments. He concludes that with the average dose of 0.5 to 3.0 cc. mild vertigo and nausea have been produced, that there is a tendency to purgation, that larger doses could be given to adults and that preparation of the patient is not needed.

PROCEDURE

In using the drug we have carried out three series, the first and second among the pupils of the Aldridge School, the third in the co-operating schools of Walker County. The first two were completed on successive years. We have also been able to include a few children under school age.

*Read before the Association, in annual session, Mobile, April 21, 1932.

The patient was requested to take the medicine before breakfast, two hours later take a dose of salts, eating nothing until after a good bowel movement. As a control thymol, grams 1.0, was given to a number of pupils in the first series, while a few received 0.5 cc. of tetrachlorethylene. In the second and third series 1.0 cc. of tetrachlorethylene was administered to all regardless of age.

SERIES 1
Aldridge School 1930-31
Tetrachlorethylene

Patient	Dosage	Subsequent Stool	Toxic Symptoms
WF 12	1.0 cc.	Negative	None
WM 6	0.5	"	"
WM 15	1.0	"	Vertigo
WM 6	1.0	"	None
WM 6	1.0	"	"
WF 16	1.0	"	Nausea
WM 11	1.0	"	None
WM 12	1.0	"	"
WM 6	0.5	"	"
WF 13	1.0	"	"
WF 11	1.0	"	"
WM 3	1.0	"	"
WM 4	0.5	"	"
WF 13	1.0	"	"
WF 17	1.0	"	"
WM 14	1.0	"	"
WF 12	1.0	"	"
WF 7	0.5	"	"
WF 11	1.0	"	"
WF 6	0.5	"	"
WM 13	1.0	"	"
WM 9	1.0	"	"
WM 11	1.0	"	"
WF 12	1.0	"	"
WF 8	1.0	"	"
WM 13	1.0	"	Cramps after salts
WF 8	1.0	"	Malaise
WF 12	1.0	Positive 1	None
2nd course	1.0	Negative	Cramps after salts
WM 7	1.0	Positive 4	None
2nd course	1.0	Negative	"
WM 11	1.0	Positive 4	Cramps after salts
2nd course	1.0	Positive 1	"

Thymol

WF 10	1.0 gram	Negative	None
WM 9	1.0	"	"
WF 6	1.0	"	"
WM 8	1.0	"	Vertigo
WF 6	1.0	"	None
WM 9	1.0	"	Abdominal pain, nausea
WM 8	1.0	"	Nausea
WM 8	1.0	"	None
WF 12	1.0	"	"
WM 13	1.0	"	"
WF 6	1.0	"	"
WM 10	1.0	"	"
WM 4	1.0	"	Nausea and malaise
WF 8	1.0	"	Malaise
WF 8	1.0	"	None
WF 9	1.0	"	"
WM 9	1.0	"	Nausea, vomiting, abdom. pains
WF 8	1.0	Positive 4	None
2nd course	1.0	Negative	"
WM 8	1.0	Positive 1	"
2nd course	1.0	Negative	None
WM 10	1.0	Positive 2	"
2nd course	1.0	Negative	"
WM 12	1.0	Positive 1	"
2nd course	1.0	Negative	"
WM 10	1.0	Positive 1	Malaise
2nd course	1.0	Negative	"
WM 17	1.0	Positive 4	None
2nd course	1.0	Negative	"
WM 8	1.0	Positive	None
2nd course	1.0	Positive 4	None
3rd course	tetrachlorethylene	Negative	None

SERIES 2
Aldridge School 1931-32
Tetrachlorethylene

Patient	Dosage	Subsequent Stool	Toxic Symptoms
WF 9	1.0 cc.	Negative	None
WM 8	1.0	"	Vertigo
WM 7	1.0	"	None
WM 9	1.0	"	"
WF 7	1.0	"	"
WF 12	1.0	"	"
WF 9	1.0	"	"
WF 6	1.0	"	"
WM 10	1.0	"	"
WF 13	1.0	"	"
WM 6	1.0	"	"
WF 11	1.0	"	"
WM 3	1.0	"	"
WF 13	1.0	"	"
WM 13	1.0	Positive 1	Vertigo
2nd course	1.0	Negative	None

SERIES 3

Walker County Schools

Total treatments issued.....	588
Total reports as to toxic symptoms.....	341
Number patients having toxic symptoms.....	66
Toxic symptoms: Vertigo	48
Nausea	26
Vomiting	5
Headache	4
Abdominal pain	3
Blind and deaf, temporary.....	1
Per cent having toxic symptoms.....	19.4
Total number sending in second specimens.....	231
Number requiring second treatment.....	22
Per cent positive after treatment.....	9.5

COMMENT

In the first series tetrachlorethylene was given to thirty pupils between the ages of 4 and 17. It was necessary to repeat the treatment in three cases (10%). One patient remained positive after two treatments. Toxic symptoms were observed in three cases, one complaining of vertigo, one of nausea and one of malaise. Cramping, following the ingestion of salts, was complained of by four.

Thymol, grams 1.0, was taken by 24 pupils in the same age group. It was necessary to repeat the treatment in seven instances. In one case tetrachlorethylene was given as a third dose. Vertigo was observed once, nausea four times, malaise four, abdominal pain twice and vomiting once, seven pupils being affected.

The second series consisted of fifteen treatments, the age group being 3-17. One course had to be repeated. Five of these patients had received treatment the year previous, two having received thymol and three tetrachlorethylene. However re-infection is the probable factor as fifteen others positive this year were negative last. Vertigo in two instances was the only symptom complained of.

In the last series nineteen schools are represented in the group sending in second specimens. Nine and one-half per cent of the second stool examinations were positive. Toxic symptoms were complained of by sixty-six individuals, vertigo forty-eight times, nausea twenty-six, vomiting five, headache four, abdominal pain three, and blind and deaf one.

The method of approach in the questioning of the pupil as to the toxic symptoms will affect these results. This is borne out by the fact that two schools representing one-fifth of the total had over half of the pupils that complained of toxic symptoms.

CONCLUSIONS

- (1) Examination of the stool following treatment with tetrachlorethylene showed this drug effective in 90.5 per cent of 276 cases.
- (2) In 386 treatments, toxic symptoms were reported in 71 (18.3%).
- (3) Tetrachlorethylene is more effective than thymol in the dosage used.
- (4) Tetrachlorethylene is less toxic than thymol.
- (5) Vertigo is the most prominent toxic symptom, with nausea next.
- (6) Larger doses would probably increase the effectiveness of the treatment without increasing the toxic symptoms to any great extent.

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ACUTE MASTOIDITIS*

INDICATIONS FOR OPERATIVE TREATMENT

WALTON H. ANDERSON, M. D.
Decatur

During the course of every case of acute infection of the middle ear there occurs some inflammation of the mastoid cells. It is important, therefore, that we differentiate between the border line cases and those that require a mastoid operation. I shall endeavor to bring out the important points of diagnosis, with emphasis on the chief ones. In typical acute mastoiditis we may expect to find some of the following clinical signs and symptoms.

1. History of a predisposing cause such as an acute infection of the nose and throat, scarlet fever, measles, tonsillitis, pneumonia, etc.
2. History of pain, earache and discharge from the middle ear.
3. Pain and tenderness over the mastoid process.
4. Edema, redness, tenderness on pressure, and fluctuation over the mastoid area.
5. Sagging of the periosteum of the posterosuperior auditory canal and protrusion of the auricle outward from the head.
6. Bulging and change in color or perforation of the tympanic membrane with or without discharge through this perforation.
7. Inability of the patient to hear well on the affected side. Blood counts will show an increase in the number of total whites and a differential count will give an increase of polymorphonuclear leucocytes. However, this picture may be produced by any middle ear infection and cannot be relied upon alone.
8. The temperature may be normal, slightly elevated or may run to a high degree. Cultures from the discharge will tend to determine virulence of the infection.
9. Radiographs may reveal a cloudiness of the mastoid antrum and cells, indicative of destruction of bone, and the presence of fluid in the mastoid area. Signs of intra-cranial complications, such as meningitis,

*Read at a recent meeting of the Morgan County Medical Society.

brain abscess and sometimes internal ear involvement, may be present.

10. Systemic evidences such as dehydration, coated tongue, and other changes that go with toxemia.

All of the above mentioned signs and symptoms, if present, make the diagnosis simple. However, in most cases but few of these are present at one time. It is therefore advisable to treat the patient symptomatically, keeping him under observation a few hours before attempting to do a mastoidectomy. If the drum has not been incised this should be done immediately by making a free incision at the proper place. The patient should have large quantities of fluids, elimination should be accelerated and sufficient doses of analgesics should be administered to keep him comfortable. If later we have to operate our mortality may be lessened because of the wall of lymphocytes that has been thrown around the area of infection. Of course we have to watch for some of the graver complications and be ready for an emergency operation should any of these conditions present themselves.

Let us now consider each symptom and sign and the aspects of them that may have a determining effect upon our decision in regard to an operation. For example, mastoid disease following scarlet fever or measles is much more likely to require an early operation than mastoid involvement following an ordinary coryza, as the complications of the first mentioned diseases are apt to destroy bone very rapidly. With much bone destruction it is imperative that we operate early in order to preserve the function of the middle ear.

Pain in the form of earache is usually present several hours before pain is noticed over the mastoid area. Discharge from the middle ear seldom develops without earache. However, there are exceptions to this rule as an abscessed ear of previous years may have left a perforated ear drum, which enables the discharge to pass freely and without accompanying pain from the middle ear. Should we have free drainage without relief from pain then a mastoid operation is indicated.

Tenderness on pressure over the mastoid process without other signs and symptoms may be misleading. This tenderness is usu-

ally more marked over the mastoid antrum; next in degree over the tip of the mastoid process; and third, over the emissary veins of the mastoid. It must be borne in mind that mastoids are sometimes abnormally sensitive to pressure over the antrum. The healthy side should, therefore, be used as a control. Tenderness may be present from cellulitis in this area due to furunculosis and eczema of the canal. However, these patients usually have tenderness anterior to the tragus which is not present in mastoid disease unless there is extensive involvement of the zygomatic cells. Of course, it is possible to have mastoiditis and furunculosis in the same patient. In a case of this kind, pain, tenderness and discharge cannot be relied upon and a differential diagnosis should be made on other findings.

Redness is usually an early symptom. Especially is this true in children. Edema comes at a later stage and is more distressing to the doctor though it is not necessarily a bad omen. However, if furunculosis can be ruled out, it is a fairly certain sign that you have a mastoid of a progressive type. Fluctuation simply means that there is a perforation of the outer layer of the skull. This perforation may be large or so small that it is not noticed by the naked eye. Of course, you see fluctuations in this area following furunculosis and eczema of the canal or following infections of the scalp that have produced a post-auricular abscess. The protrusion of the auricle is always suspicious of cellulitis in the mastoid area and may be seen either in furunculosis or mastoid disease.

Sagging of the periosteum of the posterosuperior auditory canal is caused by perioritis, produced by infection of the anterior and superior mastoid cells. This is a time-honored operative sign and is stressed by all textbooks. It is always present in advanced cases but may not occur until very late in the disease. It must be differentiated from exotosis or other abnormalities of the canal.

Impaired hearing without furunculosis of the external auditory canal or involvement of the labyrinth is always suggestive of mastoiditis of a type that demands surgery since a simple middle ear infection does not impair hearing to a marked degree

unless the external auditory canal is filled with pus. Before laying too much stress on this symptom, though, the canal should be thoroughly cleansed and a careful history obtained to determine whether or not patient's hearing was good before this disease developed.

Elevated temperature has some bearing on the future treatment of a mastoid case. As a rule, the fever present in a mastoiditis is in keeping with that of an ordinary middle ear infection but there are a few things that are worthy of consideration regarding the elevated temperature of mastoiditis. Should mastoid symptoms suddenly grow worse and the temperature become elevated at the same time; or should the temperature continue after the ear has drained well for several days; or should the temperature become normal and remain so for a reasonable period of time, then suddenly become elevated without any appreciable changes in the middle ear, you have symptoms of a mastoiditis requiring surgery.

Cultures made from the discharge from the middle ear may reveal *Streptococcus hemolyticus* which is a very destructive organism to bony structures. Its presence always tends to make the surgeon operate early. Especially is this true in border line cases. The pneumococcus of Type III is probably the next most dangerous organism found in cultures taken from these ears.

A high leukocyte count is of some importance in differentiating a mastoiditis from external canal involvement since an infection of the external canal seldom produces a leukocytosis. A high total white count that shows a marked increase in polymorphonuclears and continues to increase with the mastoid symptoms is quite indicative of a need for surgery. Especially is this true if there are a large number of *stab* cells present.

Radiographs are of importance and should be used to confirm but not necessarily to make the diagnosis. Stereoscopic films should always be used. The position of the head should be such as to show both mastoid areas in order that the supposedly diseased side can be compared with the healthy one. Repeated x-ray films will be of great help to the surgeon in observing the progress of the disease; pictures taken

daily will enable one to tell if the destruction of bone is progressive.

Intracranial or internal ear involvements are always signs for immediate operation but, unfortunately, an operation delayed to this point promises much less than at any other time.

Systemic evidences such as dehydration, coated tongue, extremely dry skin and marked diarrhea, such as is frequently seen in children, point toward immediate surgery.

In conclusion I would like to say that there is no one symptom that can be relied upon to tell when a mastoidectomy should be done. Of course, any grave complication within itself is sufficient ground for an operation. No where in ear, eye, nose and throat work is good judgment more necessary in determining when and when not to operate.

Strychnine Poisoning—Strychnine poisoning is rather frequent, and its occurrence is rendered dramatic by the dreadful agony of its course and the commonly fatal termination. Most of the sources of poisoning could be easily avoided especially in the tragic cases of infants. Moreover, the agony of the developed poisoning can be completely eliminated and nearly all fatalities could probably be prevented by proper treatment. The most prolific source of strychnine poisoning is chocolate or sugar coated household laxative or "tonic" pills. The dreadful slaughter from household "remedies" is the more regrettable since it has not been proved that the strychnine in laxative pills serves any useful purpose. Some restriction of the promiscuous sale of this violent poison in the guise of supposedly harmless household remedies is necessary and the board of trustees of the American Medical Association are considering the question of action along these lines. In the treatment of strychnine poisoning, the barbituric acid derivatives have opened a new chapter. They do not differ from the older hypnotics in principle but rather in the combination of high efficiency with relatively high safety, and by the fact that they may be administered intravenously in emergencies such as strychnine poisoning. (Jour. A. M. A., June 4, 1932, p. 1992.)

New and Nonofficial Remedies—There is no better way of keeping up to date on the newer remedies than to follow the work of a competent, unbiased group of scientific investigators, working altruistically in the interest of the medical profession. The Council on Pharmacy and Chemistry is such a group. New and Nonofficial Remedies is its list of accepted products. The book is published annually and describes accepted articles and includes facts the physician should know. It keeps physicians up to date regarding the newest remedies.—(Jour. A. M. A., September 5, 1931, p. 707.)

THE JOURNAL
OF THE
Medical Association of the State of Alabama

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Associate Editors

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Office of Publication:

519 Dexter Avenue.....Montgomery, Ala

Subscription Price.....\$3.00 Per Year

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent.

August 1932

ORGANIZED MEDICINE'S RESPONSIBILITY
TO THE FEDERAL NARCOTIC LAW

In the rapidly changing social order and the precipitate readjustment facing all civilized peoples, one of the serious problems presenting is that dealing with the narcotic traffic. The seriousness of the narcotic problem has not yet been fully recognized by the American people nor by the medical profession. In this country, the forces combating this evil have been led for a number of years by Capt. Richmond P. Hobson, President of the International Narcotic Education Association. The first demand for international action to meet the danger of narcotic drug addiction came from China, but it was the United States that called the first international conference in Shanghai in 1909. This came through the efforts of Bishop Brent. But the delegates to that conference were not accredited representatives and could not pledge their governments. They prepared the ground, however, for the Hague Convention in 1912; and what the Shanghai Conference had suggested, the Hague Convention unqualifiedly approved. It set up definitely the theory of limitation of manufacture of narcotic drugs; the sale and use of these drugs for purely medical and legit-

imate purposes to be strictly regulated by law in the various co-operating countries.

The World War intervened, and the question of regulation and limitation of narcotics finally came before the League of Nations, which set up an Advisory Committee on Traffic in Opium and Other Dangerous Drugs. From 1920 to 1927 there was no non-producing or non-manufacturing country represented on the Advisory Committee and the whole procedure was one of delay.

The desire for financial gain has brought all narcotic drug producing nations into competition in an effort to make drug addicts of whole peoples in order to command an ever-increasing market for the enslaving product.

There are two distinct narcotic problems that menace the world: the old opium problem which affects chiefly the eastern peoples; and the new heroin problem, that now menaces the western world, particularly the eastern part of the United States. In 1924, the United States passed laws prohibiting the manufacture of heroin. This most vicious drug was not only legally condemned by the United States Government but it was outlawed by the medical profession of the United States. Yet we find this authoritative statement in the remarks of Representative Walter F. Lineberger before the House of Representatives:

"Narcotic drug addiction is a serious universal problem which has become acute in America through the spread of heroin addiction. There are probably five times as many narcotic drug addicts in the world as there ever were slaves at any one time, and the bondage is far more abject and far more dangerous.

"America is being assailed by opium with Asia as a base, by cocaine with South America as a base, by heroin and synthetic drugs with Europe as a base. An unscrupulous traffic within joins the traffic from without. This deadly drug warfare, that from three sides and from the inside is striking at our citizens, our homes, our institutions, the very germ plasm of our people, is more destructive and biologically more dangerous to our future than would be united military warfare against us from these three continents."

What has been the result to date of the Geneva conventions on the problem of narcotics? The convention of 1925 set up a proposed plan of international co-operation in limitation of manufacture and controlled distribution of narcotics. It required the ratification of only ten countries.

Article 30 of the Geneva Convention of May, 1931, provides:

"The present convention shall come into force 90 days after the Secretary General of the League of Nations has received the ratification or accession of 25 members of the League of Nations or non-members, including any four of the following: France, Germany, United Kingdom of Great Britain, and Northern Ireland, Japan, Netherlands, Switzerland, Turkey and the United States of America."

This is the joker in the Geneva Convention of 1931. It must be ratified by 25 nations, including any four of the great drug producing countries, before July 13, 1933! More than seven months have passed and not a single nation has ratified. The situation in America is characteristic. The Geneva convention signed July 13, 1931, was left out when the President transmitted to the Senate upon the convening of Congress, pending treaties and conventions. The alarming feature of this situation is that there should be such complete lethargy when the prompt, whole-hearted leadership of America is so vital and so logical.

In 1930, the Federal Congress passed legislation placing in the hands of all medical licensing boards lists of convictions in the Federal Courts for violation of the narcotic law. In every State, but particularly in Alabama, the organized profession has been clothed with the legal power to regulate medical practice through the granting, withholding or the withdrawal of licenses to practice medicine. It appears that governments, our own among the number, are not entirely above the suspicion of at least passive participation in the exploitation and enslavement of human beings through habit-forming drugs. With the world bowed down under the weight of economic depression, drug addiction and unemployment create a vicious circle. Shall organized medicine allow itself to be drawn into the vicious circle as a participant in the crime or shall it exercise its powers of leadership in clearing a way out? With July 12, 1933 less than a year away, governmental delay in ratification of the Geneva convention and the lethargic attitude of organized medicine with regard to the whole problem are likely to prove costly to the nation in life and character and the stability of our institutions. Wherever responsibility legally rests, it should be shouldered and borne.

BROOKINGS INSTITUTION REPORT ON ALABAMA'S GOVERNMENT

For the interested student of government, the report of the Brookings Institution submitted to Governor Miller and just released from the press, unquestionably furnishes much food for sober thought. In literary style it is crystal-clear and forceful, and its conclusions and recommendations seem, in the main, to be logically based upon premises carefully backed by concrete and factual evidence.

Two dominant notes are perpetually struck and run through the entire theme, viz.:—centralization and standardization. Political activities and interests, according to these authorities, should crystallize about one central figure—the Governor—and to him be left the task of seeing that the State's affairs are wisely, sanely and efficiently conducted. Experience seems to abundantly teach that a profusion of democracy in administrative affairs and deliberative bodies seldom makes for efficiency. In this connection the report says:

"Real democracy, if it is to be a fact in the administrative branch of the government, demands centralization of authority and responsibility in the hands of a single elective official. One of the most persistent illusions in American popular thinking is that democracy is furthered by the multiplication of elective officers. The facts are quite to the contrary."

Amongst the many sound recommendations to be found in this report and one which is basic and fundamental, is that suggesting the creation of a Legislative Reference Bureau to aid and guide future legislation. In this connection, the report has this to say:

"In the laws of Alabama, few sound principles are consistently adhered to. Legislation has been hasty, ill-considered, badly drafted, ambiguous, inconsistent."

To the State Health Officer, as the administrative head of the Department of Health, many of the criticisms and suggestions bearing on this department are indeed gratifying. A few of these are given below:

"The State Health Department is administered with a high degree of efficiency. The allocation of the activities among the bureaus in the department is in accordance with established administrative procedure; the co-ordination of the services of the several bureaus is thorough; and the team spirit

prevailing among the personnel throughout the department is noteworthy. Depressed economic conditions furnish no conclusive reason for reducing necessary investments for well-administered and economical public health service."

"Compared with the total of State appropriations for all purposes, those made for public health administration do not appear excessive."

"It will also be noted that 39 per cent of the State's appropriation for health work in 1930 was allocated to counties for the maintenance of local health service. . . . The net reduction (in the appropriations made for health work for the fiscal year 1931-1932) amounts to 11.6 per cent., not including the State-aid fund (\$135,000). It is felt by those most conversant with public health administration that further reduction might lessen the effectiveness and efficiency of the work and would not be in the interest of true economy."

Among the recommendations are to be found the following:—

"That the present plan of organization and administration of the State Board of Health be continued without any radical change."

"That consideration be given as soon as practicable to the providing of adequate and suitable quarters for the State Health Department."

Even though one may not be prepared or inclined to accept, *in toto*, all of the conclusions reached, one can but be impressed with the staggering mass of factual data culled from many different sources. These volumes, seriously and studiously accepted, should serve as a lamp to the faltering footsteps of our legislators as they trek along the rocky road to a balanced State budget.

PRESERVE YOUR JOURNALS

It is believed that there are those in the Association who will want each year's volume of the Journal bound in permanent form for the library shelf. If the Secretary is correct in this assumption, he advises that each monthly number be preserved until the volume is complete. The Secretary then will be glad to lend such aid as is necessary to have the volume bound at minimum cost. Volume 2 of the Journal began with the July 1932 number and will be concluded with the June 1933 number. All members who feel that they would like to have all issues of the Journal preserved in bound form should see that each number is kept, as the bound volume authorized by the Association at its last meeting in Mo-

bile will not include the scientific and other contributions, but merely the roster of members and the proceedings of the Association.

1932 MEETING, SOUTHERN MEDICAL ASSOCIATION, BIRMINGHAM

(*Editorial, South. M. J., August 1932*)

The value of any medical meeting is in direct proportion to the stimulation received from it.

In times of business apathy one loses little from an absence of a few days from practice. On the other hand, the programs of the Southern Medical Association have become progressively better than in former years when it seemed next to impossible at times to get away from the urgent demands of professional duties.

From a former four-day session the meeting has been condensed to one day of general clinics plus two days for section papers. Thus the time away from home will not be long, whereas the change of environment, the contact with old friends, the making of new acquaintances, and the acquisition of new data on the various problems of medicine, make any medical meeting of great value. . . .

However, a striking difference is always observed at meetings of the Southern Medical Assembly, namely: there is a friendliness and cordiality not found at similar gatherings elsewhere. Furthermore, the informality that enables one to discuss papers without prearrangement is always as agreeable as it is surprising to newcomers.

A great deal of time and effort has been expended in building the general clinics and section programs so that they will comprise a short postgraduate course in medicine. This gathering will offer a rare opportunity for hearing from those best qualified to discuss them the worthwhile advances in the practice of medicine, surgery and the other specialties. . . .

The Southern Medical Association is made up of more sections than any medical organization in the world.

It is not too early to begin thinking of the meeting of the Association next November 16 to 18 in Birmingham. Every Southern physician should see to it that nothing shall prevent his attending this meeting.

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Stanley, W. A., Enterprise
Stephens, S. H., Mobile
Stockton, F. E., Birmingham
Suggs, S. D., Montgomery

T

Taylor, A. S., Birmingham
Taylor, J. L., Mobile
Taylor, R. V., Jr., Mobile
Terrill, J. W., Ensley
Thompson, W. A., Citronelle
Thresh, J. N., Grand Bay
Tisdale, W. C., Mt. Vernon
Townsend, C. V., Mobile
Tubb, E. H., Cordova
Tucker, E. W., Fairfield

U

Ussery, G. C., Roanoke

W

Walker, J. E., Opelika
Walsh, G. H., Fairfield
Weldon, J. M., Mobile
Westcott, W. B., Montgomery
Wickliffe, T. F., Jasper
Wilkinson, H. B., Montgomery
Williams, K. B., Hartford
Wilson, J. M., Mobile
Wilson, W. E., Montgomery
Wise, L. M., Mobile
Woodall, J. B., New Brocton
Woodruff, G. G., Anniston

VISITORS

Dr. G. C. Anderson, New Orleans
Dr. W. W. Blackman, Atlanta
Dr. Henry Boswell, Mississippi
Dr. W. R. Buffington, New Orleans
Dr. W. W. Eley, Biloxi
Dr. M. J. Gelpi, New Orleans
Dr. A. R. Haisfield, Pensacola
Dr. J. R. Johnson, Mississippi
Dr. J. A. Lanford, New Orleans
Dr. M. M. Magee, Mississippi
Dr. A. K. McMillan, Mississippi
Dr. Sidney Meeker, Memphis
Dr. L. J. Moorman, Oklahoma City
Dr. Alton Ochsner, New Orleans
Dr. E. C. Parker, Gulfport
Dr. J. H. Pierpont, Pensacola
Dr. Curtice Rosser, Dallas
Dr. T. B. Sellers, New Orleans
Dr. A. M. Shelamer, Union
Springs
Dr. H. L. Simpson, Pensacola
Dr. Percy Toombs, Memphis
Dr. M. T. Van Studdiford, New
Orleans
Dr. A. W. White, Pensacola
Dr. R. A. Woolsey, St. Louis
Dr. L. R. Young, Louisiana
Dr. J. H. York, Atlanta
Mrs. H. S. Abercrombie
Mrs. F. L. Abernethy

Mrs. J. F. Alison
Mrs. S. B. Alison
Mrs. V. L. Ashcraft
Mrs. J. H. Baumhauer
Mrs. J. E. Beck
Mrs. W. H. Blake, Jr.
Mrs. Means Blewett
Mrs. A. C. Branyon, Sr.
Mrs. Curt Branyon
Mrs. J. L. Bryan
Mrs. W. G. Casey
Mrs. E. W. Cawthon
Mrs. F. L. Chenault
Mrs. R. H. Cochrane, Jr.
Mrs. Herbert Cole
Mrs. J. H. Dodson
Mrs. M. E. Doughty
Mrs. J. T. England
Mrs. G. H. Fonde
Mrs. Toulmin Gaines
Mrs. C. P. Gay
Mrs. M. O. Grace
Mrs. G. H. Herring
Mrs. R. C. Hill
Mrs. J. F. Holley
Mrs. W. C. Holmes
Mrs. P. J. Howard
Mrs. J. A. Keyton
Mrs. R. P. Lester
Mrs. T. K. Lewis

Mrs. D. T. McCall
Mrs. J. C. McDaniel
Mrs. Shelton Meharg
Mrs. E. F. Moody
Mrs. P. B. Moss
Mrs. L. S. Nichols
Mrs. J. C. O'Gwynn
Mrs. G. G. Oswalt
Mrs. J. L. Parsons
Mrs. J. D. Perdue
Mrs. J. U. Reaves
Mrs. Talley Roach
Mrs. L. W. Roe
Mrs. C. H. Ross
Mrs. J. F. Rowe
Mrs. J. O. Rush
Mrs. J. G. Sanders
Mrs. E. M. Scott
Mrs. G. O. Segrest
Mrs. I. J. Sellers
Mrs. Ed Sledge
Mrs. G. R. Smith
Mrs. T. E. Snoddy
Mrs. L. V. Stabler
Mrs. S. H. Stephens
Mrs. R. V. Taylor
Mrs. T. F. Taylor
Mrs. W. A. Thompson
Mrs. G. G. Woodruff
Mrs. R. A. Wright

SUMMARY OF ANNUAL ATTENDANCE

Year	Life Counsellors	Active Counsellors	Delegates	Members	Visitors	Total	Place
1910	10	44	83	157	51	344	Mobile
1911	14	53	66	139	19	291	Montgomery
1912	16	63	92	348	40	559	Birmingham
1913	7	49	83	124	17	280	Mobile
1914	16	67	85	226	20	414	Montgomery
1915	32	74	108	429	49	692	Birmingham
1916	19	66	92	106	41	306	Mobile
1917	18	64	96	199	32	409	Montgomery
1918	27	63	80	257	44	471	Birmingham
1919	22	43	87	94	102	348	Mobile
1920	16	61	59	85	51	272	Anniston
1921	26	65	73	183	58	405	Montgomery
1922	26	72	76	314	68	556	Birmingham
1923	14	48	66	106	50	284	Mobile
1924	29	70	84	230	79	492	Montgomery
1925	27	78	97	328	113	643	Birmingham
1926	33	74	105	194	131	537	Mobile
1927	36	85	104	252	87	564	Montgomery
1928	33	77	108	507	106	831	Birmingham
1929	19	60	102	176	109	466	Mobile
1930	32	83	106	286	102	609	Montgomery
1931	26	80	116	410	158	790	Birmingham
1932	19	60	101	158	133	471	Mobile

THE ROLL OF COUNSELLORS

REVISION OF 1932

LIFE COUNSELLORS

Name and Address	Date of Election
Andrews, Glenn, Montgomery 2)	1893
Baker, J. N., Montgomery (2)	1905
Betts, William Frank, Evergreen (2)	1904
Blake, Wyatt Heflin, Sheffield (8)	1892
Bondurant, Eugene DuBose, Mobile (1)	1894
Britt, W. S., Eufaula (3)	1905
Cameron, Matthew Bunyan, Eutaw (6)	1893
Cunningham, William Moody, Jasper (7)	1912
Davie, Mercer Stillwell, Dothan (3)	1904
Givhan, Edgar Gilmore, Montevallo (6)	1903
Green, Henry, Dothan (3)	1900
Guice, Charles Lee, Gadsden (5)	1899
Harper, Wm Wade, Selma (4)	1902
Harris, Elisha McCullough, Russellville (7)	1904
Harris, Seale, Birmingham (9)	1903
Harrison, William Groce, Birmingham (9)	1896
Heacock, Jos. D., Birmingham (9)	1912
Heflin, Wyatt, Birmingham (9)	1893
Hill, Luther Leonidas, Montgomery (2)	1888
Hill, Robert Somerville, Montgomery (2)	1898
Howle, James Augustus, Falkville (8)	1895
Jones, Capers Capehart, East Lake (9)	1881
Justice, Oscar Suttle, Central (4)	1896
McCain, William Jasper, Livingston (6)	1898
McElrath, William Sparke, Cedar Bluff (5)	1908
McLeod, John Calvin, Bay Minette (2)	1911
Mohr, Chas. A., Mobile (1)	1909
Partlow, William Dempsey, Tuscaloosa (6)	1909
Petty, Frank Paul, Decatur (8)	1909
Pride, William Thomas, Madison (8)	1899
Prince, Edward Mortimer, Birmingham (9)	1909
Ray, Jacob Ussery, Woodstock (6)	1906
Simms, Benjamin Britt, Talladega (4)	1901

Stewart, John Pope, Attalla (5)	1908
Talley, Dyer Findley, Birmingham (9)	1902
Thigpen, Charles Alston, Montgomery (2)	1900
Turner, James Perry, Cropwell (4)	1912
Wilkinson, David Leonidas, Birmingham (9)	1902
Wilkinson, John Edward, Prattville (4)	1892
Total, 39.	

ACTIVE COUNSELLORS

Those marked with a † are serving last terms of six years.
Those marked with an asterisk (*) are serving second terms of seven years.

Those without a symbol are serving first terms of seven years.

The numeral is the number of the congressional district.

	Date of Elec-	Expi- ration
Acker, Paul Jerome Morris, Mobile (1)	*1930	to 1937
Alison, Samuel Blakemore, Minter (4)	*1926	to 1933
Ashcraft, Virgil Lee, Reform (7)	*1926	to 1933
Bailey, E. B., Demopolis (1)	1928	to 1935
Bedsole, James Goodman, Jackson (1)	*1929	to 1936
Brothers, Thomas J., Anniston (4)	1914	
Broughton, Lewis Edward, Andalusia (2)	1916	
Burdshaw, Shelby L., Headland (3)	*1928	to 1935
Caldwell, Edwin Valdivia, Huntsville (8)	†1932	to 1938
Cannon, Douglas L., Montgomery (2)	1928	to 1935
Cardon, S. G., Center (5)	1916	
Chandler, Joel C., Columbiana (6)	*1930	to 1937
Chenault, Frank L., Decatur (8)	1917	
Crutcher, John Sims, Athens (8)	1915	
Cryer, George A., Anniston (4)	*1932	to 1939
Obabney, Marye Y., Birmingham (9)	*1930	to 1937
Doughty, Mordecai Edward, Slocomb (3)	*1929	to 1936
Dowling, Judson Davis, Birmingham (9)	*1929	to 1936
Dupree, Marion W., Athens (8)	*1930	to 1937
Faulk, William M., Tuscaloosa (6)	1913	
Gordon, Samuel A., Marion (6)	1913	
Grace, Malcolm O., Ozark (3)	*1930	to 1937
Gragg, Vincent Jones, Clanton (6)	*1928	to 1935
Granger, F. G., Ashford (3)	1928	to 1935
Greer, William H., Sheffield (8)	*1927	to 1934
Gresham, George L., Andalusia (2)	1913	
Hagood, M. H., Brewton (2)	*1931	to 1938
Hatchett, Wm. C., Huntsville (8)	1929	to 1936
Hayes, Charles Philips, Elba (3)	*1927	to 1934
Hayes, Julius Poe, Clanton (6)	*1927	to 1934
Heflin, Howell T., Birmingham (9)	1914	
Hendrick, Walter Brannan, Hurtsboro (3)	1915	
Hill, Robert L., Winfield (7)	*1931	to 1938
Hollis, Jonathan Shelton, Covin (7)	*1930	to 1937
Holmes, Sibley, Bay Minette (2)	1931	to 1938
Hough, James Spencer, Livingston (6)	1930	to 1937
Howell, William Edward, Haleyville (7)	†1932	to 1938
Hubbard, T. Brannon, Montgomery (2)	*1932	to 1938
Hutchinson, Wm. H., Childersburg (4)	*1929	to 1936
Jackson, Alva A., Florence (8)	†1932	to 1938
James, Ashley D., Choctaw (1)	1915	
James, Norman Gilchrist, Hayneville (2)	*1928	to 1935
Kelly, Edward Lamar, Evergreen (2)	1931	to 1938
Leach, Sydney, Tuscaloosa (6)	*1927	to 1934
Lester, Belford S., Birmingham (9)	*1930	to 1937
Lightfoot, Phillip Malcolm, Shorter (3)	†1932	to 1938
Long, Clarence, Hurtsboro (3)	*1927	to 1934
Lull, Cabot, Birmingham (9)	*1926	to 1933
Lupton, Frank A., Birmingham (9)	1913	
Martin, James Cordie, Cullman (7)	1917	
Mason, E. M., Birmingham (9)	*1931	to 1938
Mason, James Monroe, Birmingham (9)	†1932	to 1938
Mayer, Kossuth Aaron, Lower Peach Tree (1)	*1926	to 1933
McAdory, Edward Dudley, Cullman (7)	*1927	to 1934
McCall, Daniel T., Mobile (1)	*1930	to 1937
McLester, James Somerville, Birmingham (9)	1913	

ACTIVE COUNSELLORS—Continued

	Date of Elec- Expi- tion ration
Miles, W. C., Oneonta (7).....	1928 to 1935
Miller, W. T., Ft. Payne (5).....	1928 to 1935
Morris, William E., Georgiana (2).....	1913
Moxley, Joseph Benjamin, Brantley (2).....	*1928 to 1935
Newman, Samuel Harris, Dadeville (5).....	*1932 to 1939
Noel, W. E., Boaz (5).....	1928 to 1935
Noland, Lloyd, Fairfield (9).....	1929 to 1936
Nolen, Jolin A. M., Alexander City (5).....	*1927 to 1934
Oates, William Henry, Mobile (1).....	1913
Oswalt, G. G., Mobile (1).....	1929 to 1936
Price, Albert Bascom, Gordo (7).....	*1926 to 1933
Ralls, Arthur W., Gadsden (5).....	*1926 to 1933
Redden, Raymond Hollis, Sulligent (7).....	1926 to 1933
Rountree, W. S., Wylam (9).....	*1931 to 1938
Rucker, Edmon W., Birmingham (9).....	*1929 to 1936
Sankey, Howard J., Nauvoo (7).....	1914
Scott, Walter F., Birmingham (9).....	*1929 to 1936
Searcy, Geo. H., Tuscaloosa (6).....	1929 to 1936
Searcy, Harvey Brown, Tuscaloosa (6).....	*1930 to 1937
Shropshire, Courtney William, Birmingham (9).....	*1930 to 1937
Sledge, Edward Simmons, Mobile (1).....	*1929 to 1936
Smith, Russell Aubrey, Brewton (2).....	*1932 to 1938
Speir, Phillip V., Greenville (2).....	1917
Tankersley, James, Prattville (4).....	1928 to 1935
Taylor, Woodie R., Town Creek (8).....	*1932 to 1939
Thomas, Eugene Marvin, Prattville (4).....	*1927 to 1934
Tucker, John S., Centerville (6).....	1926 to 1933
Waldrop, R. W., Bessemer (9).....	*1929 to 1936
Walker, Alfred A., Birmingham (9).....	*1930 to 1937
Walls, J. J., Alexander City (5).....	*1931 to 1938
Ward, Henry Silas, Birmingham (9).....	1915
White, Alexander L., Thomasville (1).....	1928 to 1935
Whitman, Clayborne R., Tuscumbia (8).....	1929 to 1936
Wilkerson, Fred Wooten, Montgomery (2).....	*1926 to 1933
Williams, Mark Johnson, Oxford (4).....	*1927 to 1934
Williamson, George W., Hartford (3).....	*1932 to 1938
Total, 92.	

COUNSELLORS-ELECT

Beard, Robert Briggs, Troy (2).....	1932 to 1939
Craddock, French H., Sylacauga (4).....	1932 to 1939
Garber, James R., Birmingham (9).....	1932 to 1939
Jordan, James Wiley, Ashland (4).....	1932 to 1939
Moore, David S., Jr., Birmingham (9).....	1932 to 1939
Moore, Gilmer H., Opelika (3).....	1932 to 1939
Shaddix, Marion L., Alabama City (5).....	1932 to 1939
Wright, David H., Berry (7).....	1932 to 1939
Total, 8.	

THE ROLL OF THE COLLEGE OF COUNSEL-
LORS BY CONGRESSIONAL DISTRICTS

On this roll the names of the Counsellors are given by Congressional Districts. It is intended to serve as a guide in the election of new Counsellors, with a view to the distribution of them in approximate proportion to the number of members in the several districts. It is not considered to be good policy, and it is not considered to be fair and right, to give a few large towns greatly more than their pro rata share of Counsellors. The calculations are based on the nearest whole number. On April 1, 1932, there were 1,593 members in the county medical societies. That would give one Counsellor to every 16 members.

FIRST DISTRICT

Names of Counsellors—A. D. James, Choctaw; J. G. Bedsole and A. L. White, Clarke; E. B. Bailey, Marengo; E. S. Sledge, W. H. Oates, P. J. M. Acker, D. T. McCall and G. G. Oswalt, Mobile; and K. A. Mayer, Wilcox.

County	Members	Counsellors
Choctaw	10	1
Clarke	11	2
Marengo	15	1
Mobile	91	5
Monroe	14	0
Washington	7	0
Wilcox	11	1
	159	10

SECOND DISTRICT

Names of Counsellors—Sibley Holmes, Baldwin; W. E. Morris and P. V. Speir, Butler; E. L. Kelly, Conecuh; L. E. Broughton and G. L. Gresham, Covington; J. B. Moxley, Crenshaw; M. H. Hagood and R. A. Smith, Escambia; N. G. James, Lowndes; T. B. Hubbard, F. W. Wilkerson and Douglas L. Cannon, Montgomery; and R. B. Beard, Pike.

County	Members	Counsellors
Baldwin	15	1
Butler	15	2
Conecuh	8	1
Covington	23	2
Crenshaw	12	1
Escambia	19	2
Lowndes	6	1
Montgomery	85	3
Pike	20	1
	203	14

THIRD DISTRICT

Names of Counsellors—C. P. Hayes, Coffee; M. O. Grace, Dale; M. E. Doughty, and G. W. Williamson, Geneva; S. L. Burdeshaw, Henry; F. G. Granger, Houston; G. H. Moore, Lee; P. M. Lightfoot, Macon; and Clarence Long and W. B. Hendrick, Russell.

County	Members	Counsellors
Barbour	13	0
Bullock	8	0
Coffee	17	1
Dale	13	1
Geneva	17	2
Henry	11	1
Houston	30	1
Lee	18	1
Macon	11	1
Russell	4	2
	142	10

FOURTH DISTRICT

Names of Counsellors—James Tankersley and E. M. Thomas, Autauga; T. J. Brothers, M. J. Williams and G. A. Cryer, Calhoun; J. W. Jordan, Clay; S. B. Alison, Dallas; and W. H. Hutchinson and French Craddock, Talladega.

County	Members	Counsellors
Autauga	8	2
Calhoun	38	3
Clay	9	1
Coosa	4	0
Dallas	37	1
Elmore	16	0
St. Clair	10	0
Talladega	23	2
	145	9

FIFTH DISTRICT

Names of Counsellors—S. G. Cardon, Cherokee; W. T. Miller, DeKalb; A. W. Ralls and M. L. Shaddix, Etowah; W. E. Noel, Marshall; and J. A. M. Nolen, J. J. Walls and S. H. Newman, Tallapoosa.

County	Members	Counsellors
Chambers	15	0
Cherokee	5	1
Cleburne	3	0
DeKalb	15	1
Etowah	43	2
Marshall	13	1
Randolph	11	0
Tallapoosa	15	3
	120	8

SIXTH DISTRICT

Names of Counsellors—J. S. Tucker, Bibb; J. P. Hayes and V. J. Gragg, Chilton; S. A. Gordon, Perry; Joel Chandler, Shelby; J. S. Hough, Sumter; and W. M. Faulk, Sydney Leach, H. B. Searcy and G. H. Searcy, Tuscaloosa.

County	Members	Counsellors
Bibb	13	1
Chilton	10	2
Greene	5	0
Hale	8	0
Perry	9	1
Shelby	18	1
Sumter	13	1
Tuscaloosa	45	4
	121	10

SEVENTH DISTRICT

Names of Counsellors—W. C. Miles, Blount; J. C. Martin and E. D. McAdory, Cullman; J. S. Hollis and D. H. Wright, Fayette; R. H. Redden, Lamar; R. L. Hill, Marion; V. L. Ashcraft and A. B. Price, Pickens; H. J. Sankey, Walker; and W. E. Howell, Winston.

County	Members	Counsellors
Blount	13	1
Cullman	18	2
Fayette	8	2
Franklin	16	0
Lamar	13	1
Marion	13	1
Pickens	15	2
Walker	41	1
Winston	11	1
	148	11

EIGHTH DISTRICT

Names of Counsellors—W. H. Greer and C. R. Whitman, Colbert; A. A. Jackson, Lauderdale; W. R. Taylor, Lawrence; J. S. Crutcher and M. D. Dupree, Limestone; E. V. Caldwell and W. C. Hatchett, Madison; and F. L. Chenault, Morgan.

County	Members	Counsellors
Colbert	20	2
Jackson	15	0
Lauderdale	24	1
Lawrence	10	1
Limestone	13	2
Madison	35	2
Morgan	29	1
	146	9

NINTH DISTRICT

Names of Counsellors—F. A. Lupton, J. S. Mc Lester, H. T. Heflin, H. S. Ward, J. M. Mason, Cabot Lull, R. W. Waldrop, W. F. Scott, E. W. Rucker, J. D. Dowling, M. Y. Dabney, B. S. Lester, C. W. Shropshire, Alfred A. Walker, E. M. Mason, W. S. Rountree, Lloyd Noland, J. R. Garber and D. S. Moore, Jr.

County	Members	Counsellors
Jefferson	409	19

THE ROLL OF CORRESPONDENTS

"Distinguished members of the medical profession residing outside of the State, and Counsellors of the Association, who after not less than ten years of faithful service may have resigned their counsellorships, shall be eligible for election as Correspondents.

"Correspondents shall have the privilege of transmitting or presenting to the Association such communications, or scientific essays, as they may deem proper."—*From the Constitution.*

Name and Address	Date of Election
Andrew J. Coley, Oklahoma City.....	1909
W. S. Thayer, Baltimore.....	1921
Lewellys F. Barker, Baltimore.....	1921
Rudolph Matas, New Orleans.....	1921
Frank Smithies, Chicago.....	1921
John B. Elliott, Jr., New Orleans.....	1921
Howard A. Kelly, Baltimore.....	1921
Wm. J. Mayo, Rochester, Minn.....	1921
George W. Crile, Cleveland, Ohio.....	1921
Henry A. Christian, Boston.....	1921
J. Whitridge Williams, Baltimore, Md.....	1921
Chas. H. Mayo, Rochester, Minn.....	1922
H. A. Royster, Raleigh, N. C.....	1926
Stewart Roberts, Atlanta.....	1927
G. Canby Robinson, Nashville.....	1928
Louis B. Wilson, Rochester, Minn.....	1930
Walter E. Sistrunk, Dallas, Texas.....	1931
R. S. Cunningham, Nashville.....	1932
A. Benson Cannon, New York.....	1932

SCHEDULE OF THE ANNUAL SESSIONS
AND PRESIDENTS SINCE THE RE-
ORGANIZATION IN 1868

<i>Place and President</i>	<i>Year</i>
Selma—Albert Galatin Mabry.....	1868
Mobile—Albert Galatin Mabry.....	1869
Montgomery—Richard Frazer Michel	1870
Mobile—Francis Armstrong Ross.....	1871
Huntsville—Thomas Childress Osborne.....	1872
Tuscaloosa—George Ernest Kumpe.....	1873
Selma—George Augustus Ketchum.....	1874
Montgomery—Job Sobieski Weatherly.....	1875
Mobile—John Jefferson Dement.....	1876
Birmingham—Edward Davies McDaniel.....	1877
Eufaula—Peter Bryce.....	1878
Selma—Robert Wickens Gaines.....	1879
Huntsville—Edmund Pendleton Gaines.....	1880
Montgomery—William Henry Anderson.....	1881
Mobile—John Brown Gaston.....	1882
Birmingham—Clifford Daniel Parke.....	1883
Selma—Mortimer Harvey Jordan.....	1884
Greenville—Benjamin Hogan Riggs.....	1885
Anniston—Francis Marion Peterson.....	1886
Tuscaloosa—Samuel Dibble Seelye.....	1887
Montgomery—Edward Henry Sholl.....	1888
Mobile—Milton Columbus Baldrige.....	1889
Birmingham—Charles Higgs Franklin.....	1890
Huntsville—William Henry Sanders.....	1891
Montgomery—Benjamin James Baldwin.....	1892
Selma—James Thomas Searcy.....	1893
Birmingham—Thaddeus Lindley Robertson.....	1894
Mobile—Richard Matthew Fletcher.....	1895
Montgomery—William Henry Johnston.....	1896
Selma—Barckley Wallace Toole.....	1897
Birmingham—Luther Leonidas Hill.....	1898
Mobile—Henry Altamont Moody.....	1899
Montgomery—John Clarke LeGrande.....	1900
Selma—Russell McWhorter Cunningham.....	1901
Birmingham—Edwin Lesley Marechal.....	1902
Talladega—Glenn Andrews.....	1903
Mobile—Matthew Bunyan Cameron.....	1904
Montgomery—Capers Capehart Jones.....	1905
Birmingham—Eugene DuBose Bondurant.....	1906
Mobile—George Tighlman McWhorter.....	1907
Montgomery—Samuel Wallace Welch.....	1908
Birmingham—Benjamin Leon Wyman.....	1909
Mobile—Wooten Moore Wilkerson.....	1910
Montgomery—Wyatt Heflin Blake.....	1911
Birmingham—Lewis Coleman Morris.....	1912
Mobile—Harry Tutwiler Inge.....	1913
Montgomery—Robert S. Hill.....	1914
Birmingham—Benjamin Britt Simms.....	1915
Mobile—James Norment Baker.....	1916
Montgomery—Henry Green.....	1917
Birmingham—William Dempsey Partlow.....	1918
Mobile—Isaac LaFayette Watkins.....	1919
Anniston—James Somerville McLester.....	1920
Montgomery—Louis William Johnston.....	1921
Birmingham—Dyer F. Talley.....	1922
Mobile—Walter S. Britt.....	1923
Montgomery—W. W. Harper.....	1924
Birmingham—J. D. Heacock.....	1925
Mobile—C. A. Mohr.....	1926
Montgomery—A. L. Harlan.....	1927
Birmingham—John D. S. Davis.....	1928
Mobile—E. V. Caldwell.....	1929
Montgomery—L. E. Broughton.....	1930

<i>Place and President</i>	<i>Year</i>
Birmingham—W. G. Harrison.....	1931
Mobile—Toulmin Gaines.....	1932

SECRETARIES OF THE MEDICAL ASSOCIA-
TION OF THE STATE OF ALABAMA

1852-1854.....	George A. Ketchum
1854-1855.....	R. Miller
1869-1873.....	Jerome Cochran
1874-1878.....	B. H. Riggs
1879-1892.....	T. A. Means
1893-1897.....	J. R. Jordan
1897-1904.....	G. P. Waller
1904-1906.....	L. C. Morris
1906-1915.....	J. N. Baker
1915-1923.....	H. G. Perry
1923-1924.....	Douglas L. Cannon
1924-1930.....	B. B. Simms
1930-.....	Douglas L. Cannon

TREASURERS OF THE MEDICAL ASSOCIA-
TION OF THE STATE OF ALABAMA

1854-1855.....	W. P. Reese
1869-1898.....	W. C. Jackson
1898-1915.....	H. G. Perry
1915-.....	J. U. Ray

SCHEDULE OF JEROME COCHRAN
LECTURERS

1899—J. T. Searcy, Tuscaloosa—What Is Insani- ty?
1900—Wm. Osler, Baltimore—Not present.
1901—Wm. Osler, Baltimore—Not present.
1902—Nathan Bozeman, New York—Declined.
1903—George H. Price, Nashville—The History of Medicine.
1904—W. S. Thayer, Baltimore—Cardiac and Vascular Complications of Typhoid Fever.
1905—Robert Abbe, New York—The Problems of Surgery.
1906—Joseph Collins, Boston—Arteriosclerosis.
1907—Nicholas Senn, Chicago—Final Triumph of Scientific Medicine.
1908—E. L. Marechal, Mobile—Absent.
1909—Lewellys F. Barker, Baltimore—Clinical Methods of Cardiac Investigation.
1910—Frank S. Meara, New York—Some Prob- lems of Nutrition in Early Life.
1911—Rudolph Matas, New Orleans—Inflamma- tory Tuberculosis.
1912—Maurice H. Richardson, Boston—Elimina- tion of Preventable Disasters from Surgery.
1913—L. L. Hill, Montgomery—Surgical Compli- cations and Sequelae of Typhoid Fever.
1914—Frank Smithies, Chicago—Contributions of the Twentieth Century to the Better Understanding of Gastric Cancer.
1915—John B. Elliott, Jr., New Orleans—Abscess of Liver.
1916—Howard A. Kelly, Baltimore—Radium The- rapy.
1917—Wm. J. Mayo, Rochester—Importance of Septic Infection in the Three Great Plagues.
1918—George E. Bushnell, Washington—The

Army in Relation to the Tuberculosis Problem.

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1920—Henry A. Christian, Boston—Bright's Disease With Special Reference to Its Treatment.

1921—J. Whitridge Williams, Baltimore—A Critical Review of Twenty-One Years' Experience with Caesarean Section.

1922—Chas. H. Mayo, Rochester, Minn.—The Thyroid and Its Diseases.

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1924—James S. Stone, Boston—Abdominal Diagnoses in Children.

1925—H. A. Royster, Raleigh—The Surgeon's Heritage and Outlook.

1926—Stewart Roberts, Atlanta—The Heart Muscle.

1927—G. Canby Robinson, Nashville—The Mechanism of Heart Failure and Its Correction.

1928—John B. Deaver, Philadelphia—Chronic Pancreatitis.

1929—Louis B. Wilson, Rochester, Minn.—Some Suggestions for Improved Training of Medical Specialists.

1930—Walter E. Sistrunk, Dallas, Texas—The Part That Surgical Anesthesia Has Played in Medical Science.

1931—R. S. Cunningham, Nashville, Tenn.—Studies on the Pathology of Tuberculosis and Syphilis.

1932—A. Benson Cannon, New York—Practical Points on the Diagnosis and Treatment of the so-called Lymphoblastoma Group of Diseases.

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DEPARTMENT OF PUBLIC HEALTH

BUREAU OF LABORATORIES

L. C. Havens, M. D., Director

THE WEIL-FELIX REACTION

Most serologic tests rest on the assumption that infection with a micro-organism stimulates the production of circulating antibodies which are specific for the infectious agent. On the further assumption, that antibodies are produced only against the specific organism and not against other bacteria, rests the diagnostic value of such tests. That there are exceptions to this hypothesis is well known. The Wassermann test is, of course, a notable example. Another useful test, of more recent origin, is the Weil-Felix reaction in typhus or Brill's disease. The latter is based on the observation that the blood of typhus patients contains agglutinins for certain strains of *B. proteus*. Because of this commonly observed fact, the authors of the test attributed etiologic significance to the proteus bacillus. This has, of course, been disproved, but the test remains as one of the useful diagnostic tests at our command.

These so-called non-specific reactions may not be so exceptional to our general law of specificity of antibody production as we suppose. There is some evidence that the antigens used in the Wassermann reaction contain certain substances similar to the *Treponema pallidum*, and it may be that the special strain of *B. proteus* which reacts with typhus serum, contains substances common to the Rickettsia organisms. This belief gains some support from the observation that Rocky Mountain spotted fever, another Rickettsia disease, also produces a positive Weil-Felix reaction. Be this as it may, we have in this test a diagnostic procedure of great practical value.

When endemic typhus was first recognized in Alabama, the State Laboratory¹ devoted some study to the specificity of the Weil-Felix test. These investigations showed that the reaction occurred in no other disease prevalent in Alabama except endemic typhus and, further, that it developed in at least 95% of all cases at some stage of the disease. Since that time it has

become necessary to modify the assertion that the test is entirely specific, to include, probably, to some extent at least, the whole group of Rickettsia diseases. Since it has become known that Rocky Mountain spotted fever occurs in the eastern United States, it is necessary to include this disease in the differential diagnosis. The latter, however, does not cause a Weil-Felix reaction with the same certainty that typhus does, but when a positive test is obtained, a certain element of doubt is introduced, especially in a region where spotted fever is known to be present. A history of tick bite and unusual severity of the symptoms would indicate spotted fever rather than endemic typhus.

There has been no occasion to modify the statement that a positive test is obtained in practically 100% of all cases of typhus. While the test is rarely positive before the end of the first week, the majority of cases will be positive early in the second week and few negative tests occur as late as the tenth day. In view of this high degree of specificity, a negative test should be followed by additional specimens later in the disease, if the clinical symptoms warrant. If the test is repeatedly negative spotted fever should be considered and inquiry made regarding possible tickbite.

It is important, in ascertaining the distribution and incidence of the disease and in determining its trend, whether increasing or decreasing, that every diagnosis be confirmed by laboratory examination. In the face of repeated negative results a diagnosis of Brill's disease should be made with caution.

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

TYPHUS FEVER IN ALABAMA

It has been just ten years since the first cases of typhus fever or Brill's disease were reported in Alabama. Undoubtedly the disease had existed prior to that time, but in 1922 the records of this department show ten cases reported. The following year fourteen are on record, increasing to

1. J. Infect. Dis. 40, 479, 1927.

nineteen in 1924 and to fifty-three in 1925.

Maxcy of the U. S. P. H. S., who was on duty in Alabama at that time, made a particular study of the disease and reached certain conclusions regarding its means of spread. He was unable to incriminate the louse in any case but suggested the rat as the reservoir of infection. Since his original work others have definitely shown the rat and rat flea to be responsible for the spread and have shown that control is essentially a question of rat control.

Two important epidemiologic features of the disease were stressed by Maxcy in 1924: (1) In Alabama the disease is largely confined to the southern half of the State and tends to occur in certain endemic centers. (2) The seasonal distribution is largely in the second half of the year—from July 1st to January 1st.

Experience since that time has only confirmed these findings. Certain counties in the southern part of the State have had most of the cases. Montgomery, Pike, Coffee, Houston, Henry, Geneva, Covington, Conecuh, Escambia and Mobile report over ninety per cent of the cases reported each year. The seasonal trend has also been remarkably constant. During the five years, 1927-31, over seventy-six per cent of the cases have been reported after July 1 of each year. During the same five years the total cases reported have fluctuated between sixty and eighty with no marked trend of increase or decrease. Apparently, however, something has happened in 1932. From January 1 to June 30, there were sixty-four cases reported as compared to an average of sixteen during the first half of the preceding five years.

If our seasonal trend remains constant, we may expect well over two hundred cases this year. This is a tremendous increase and would indicate that the disease is becoming common in these endemic centers since the geographic distribution is unchanged—eight southern counties reporting sixty of these sixty-four cases.

Although the disease is not an important cause of death, it is becoming an important cause of morbidity in these particular counties and sooner or later will demand control. This with our present knowledge means rat control and is a problem for the municipalities concerned.

BUREAU OF INSPECTION

C. A. Abele, Director

REORGANIZED INSPECTION SERVICE

Prior to the fall of 1931 it was the policy of the Bureau of Inspection to differentiate inspection activities into two classes: (1) dairy, creamery, and milk-plant inspections, to which only graduates in dairy husbandry or veterinary medicine were assigned; and (2) routine inspections, including hotels, barber shops, cafes, bottling plants, etc., to which experienced, but not specially educated, men were assigned. This enabled the five dairy inspectors to thoroughly cover the work in their respective districts at intervals of about six weeks, and the three hotel and cafe inspectors covered their districts at intervals of about three months; but there was, of necessity, considerable traveling over the same roads by these inspectors of different types of establishments.

During most of 1929, 1930, and 1931 inspections in counties with health departments were made in company with the sanitation officers or dairy and meat inspectors of the thirty-six county health departments including such personnel, these inspections serving as a check on the work of the local inspectors. A careful analysis of the results of this policy, however, indicated that local inspectors were exhibiting a tendency to depend upon the district inspectors to correct undesirable situations, and were, consequently, permitting to develop and exist conditions which they were employed to prevent.

The means adopted for the correction of this situation was the placing of the responsibility for conditions in each county directly upon the county health department—specifically upon the sanitation officers and dairy and meat inspectors. This change of policy having been adopted, it soon became apparent that a number of the local sanitation officers and meat inspectors were entirely competent to enforce the various regulations in their counties, and to score hotels and bottling plants, with materially less supervision than had formerly been given their work. These inspectors were "deputized" to carry on the work of the district inspectors in their counties, there-

by reducing the extent of the area the district inspectors had to cover.

The progressive fulfillment of this program so reduced the demand upon the time of the district hotel and cafe inspectors, that the bureau was able to dispense with the services of two of these inspectors on December 15, 1931. The districts of the dairy and milk inspectors were rearranged, and these men now inspect all types of establishments in their districts. This policy avoids the traveling of the same roads by more than one inspector.

The results of the application of this policy during the first six months of 1932 furnish ample proof of its soundness. During 1931 the bureau inspectors made 21,934 inspections, and five deputized inspectors (December) made 581 inspections. During the first half of 1932 three more inspectors were deputized. The eight deputized inspectors made, between January 1 and June 30, 1932, 5,385 official inspections of record. During the same period the district inspectors made 15,207 inspections. This represents an increase of nearly 80% over the total number of recorded inspections for the same period of 1931.

Of greater significance, however, is the fact that the cost per inspection of the bureau activities has been reduced, on the basis of the above figures, 48%; and, if the recorded inspections of the deputized inspectors are included, the cost, to the State, per inspection has been reduced 60%. It is also the general consensus of opinion, on the part of the county health officers, that the quality of the work, measured in concrete achievements, has been materially improved.

BUREAU OF CHILD HYGIENE AND PUBLIC HEALTH NURSING

Jessie L. Marriner, Director

EXCERPTS FROM ANNUAL REPORT 1931

Field Activities: The development of a program of group activities for advisory service to county health departments was begun early in January with the first round of district conferences. During the period from January 14 to February 9, each of the fifty-four county health departments was contacted by a group from the central office. This was accomplished by

bringing from three to six county staffs together for a one-day session at the most convenient point, within the group of counties. The central office group consisted of Drs. D. L. Cannon and B. F. Austin of the Bureau of Administration, Mr. G. M. Tate from the Bureau of Engineering, and Misses Margaret Murphy and Catherine Corley, from the Bureau of Child Hygiene and Public Health Nursing. Supplementing the efforts of the group regularly scheduled to conduct the conferences, the director of this bureau attended four of these conferences contacting 18 counties and the assistant director attended two others, contacting nine counties. In addition to the general session, the nurses present met together with a representative of this bureau for a discussion of county nursing problems.

A second series of district conferences occupied the month of May and contacted each of the fifty-four health units. These were conducted by Dr. B. F. Austin, Miss Frances Montgomery of this bureau staff, and Mr. J. C. Poole, of the Lee County staff. The director of this bureau attended one of these sessions, contacting five counties.

These advisory group efforts were followed in June by the organization of an integrating unit headed by Dr. B. F. Austin and utilizing the services of two nurses from this bureau, one to act as advisor in office procedures and one to advise on county nursing activities. A sanitation officer was also included. A second unit headed by Dr. O. L. Chason was organized and put into the field early in November. An office person from the Bureau of Vital Statistics was permanently assigned to this activity but whenever both integrating units were in the field, three nurses from this bureau were occupied with them, one as advisor in office procedures and two as advisors in nursing activities. During the last six months of 1931, a group visit lasting at least four days was made to 21 county health departments. Six of these visits occupied two members of the nursing staff; fifteen employed an advisory nurse in conjunction with an office person.

Supplementary to the planned program of the integrating units, the staff of this bureau made 79 individual advisory visits to county health departments.

Services Rendered: The service of reference and placement, with respect to nurse personnel was continued as in former years. 163 applications were received and considered. 58 applicants were given a personal interview. 7 nurses were sent to the training station at Opelika for introduction to Alabama field and office routines; of these, 3 were discontinued; 4 satisfactorily completed the period of preparation and were brought into the service. 8 resignations were received; 4 of the vacancies thus created were refilled; one was replaced by two nurses. One other white nurse was transferred to the position of second nurse in a county. Two negro second nurses were installed in counties. There were three additional transfers to permanent positions, one of these was to the State staff. Fifteen temporary assignments were made. A total of 23 assignments was handled as against 50 in 1930.

Utility nurses attached to this bureau have been assigned to county health units in 10 instances for periods varying from two weeks to two months, in which relief or supplementary nursing service was required. In 5 instances a nurse was assigned to immunization service in an unorganized county under the auspices of the Bureau of Preventable Diseases. Between field assignments, utility nurses served for brief periods in the central office where they were occupied by clerical duties.

Nursing Activities of Other Bureaus: The Bureau of Vital Statistics maintained a colored field nurse throughout the year. This bureau co-operated in the supervision of these activities. The worker was discontinued after December 31, on account of lack of funds.

The Bureau of Preventable Diseases maintained four field nurses throughout the year, for service in connection with the chest clinics. Whenever these clinics were not in operation, the nurses were made available for supplementary service in county health units. One full-time colored nurse was maintained on a special venereal disease control project in Macon County during the first eight months of the year. A part-time colored nurse was employed throughout the year in connection with the Montgomery County free clinic for venereal disease control.

There has been close correlation between the nursing activities of other bureaus and the Bureau of Public Health Nursing. Advisory service and the service of reference and placement were made available to them upon request.

Staff Education: In order that they may qualify as advisors in public health nursing, it is necessary that members of this bureau staff avail themselves of every opportunity for professional advancement. Some of the opportunities which have not been overlooked include:

(1) Study and Discussion of Professional Journals

The American Journal of Nursing
The Public Health Nurse
The American Journal of Public Health
Hygeia, and others

(2) Institutes or Lecture Courses

A series of lectures on methods of supervision given at the University of Alabama, June 14 to 19, by Dr. Kilpatrick of Columbia was attended by four advisory nurses of the State staff and by the supervisors of the Jefferson County nursing staff.

The Annual Conference of County Health Officers was held in Montgomery, September 28, 29, 30. This session was attended by the State nursing staff and by several of the county nurses.

An institute on social hygiene was arranged by the bureau for the State and county nursing staffs. It was held at Montgomery, March 23, 24, 25, with Miss Edna Moore of the National Organization for Public Health Nursing as leader. Approximately 100 nurses were in attendance.

(3) Leaves for Study

No extended leaves for study were granted during 1931. One county nurse was relieved for summer school work which she took at her own expense.

Definite objectives in staff education for county nurses have been achieved through co-operation in the individual plans of the nurses for educational advancement. By this means, practically every county nurse who is deficient in high school or college preparatory work has been induced to undertake a planned course of study. Six nurses have succeeded in working off all

deficiencies and have matriculated at a Grade A college.

One of the objectives of the integrating unit is the promotion through regular staff conferences in the county units of a planned program of professional advancement for all members of the county staff.

(4) Professional Visitors

During 1931, this bureau received 12 visitors for periods varying from one to four weeks. Eight of these were from the various states of the United States. One was from England; one from France and two from Jugoslavia. In addition to conferences with bureau directors at the central office, programs of observation in county health departments were arranged for these visitors. As a staff education measure, the reception of professional visitors reacts favorably upon members of both State and county nursing staffs. One of the visitors, Dr. Estella Ford Warner of the United States Public Health Service, gave close study for one month to the child hygiene activities of the State and County Boards of Health. Her suggestions and recommendations given verbally in conferences at headquarters were incorporated in a written report, a copy of which was sent to the State Health Officer. A careful study of these findings and recommendations have proven helpful to the bureau and to the Department of Health.

BUREAU OF ENGINEERING

G. H. Hazlehurst, Director

ODORS AND TASTES IN WATER SUPPLIES CAUSED BY MICROSCOPIC ORGANISMS

Contributed by
T. H. Milford

The term, "microscopic organisms" (plankton), embraces all microscopic, or near microscopic aquatic life other than bacteria, which inhabit streams, ditches, pools, ponds, reservoirs and lakes, waters above the ground and in the ground. They are not commonly found in ground water, however, (except when such waters are stored in open reservoirs) or in rapidly flowing streams in sufficient abundance to be objectionable. In quiescent waters of ponds, lakes and reservoirs they develop

luxuriantly. It is to the reservoir that one should first look when investigating the cause of an odor in a public water supply.

There are several types of organic matter which produce foul tastes and odors. The simplest and probably the most common of these are the end products of decay from vegetable and animal matter, including the essential oils liberated from algal growths.

The terms, "algae" and "plankton", are often used synonymously. Plankton include both plants and animals. Algae are plants and constitute one of the three groups of plants (bacteria, fungi, algae) called "thallophytes".

Large numbers of algae appear on the surface of lakes and ponds as a scum. This is often spoken of as "water bloom". Blue-green algae are more commonly responsible for this phenomenon. Blue-green, green and brown algae or diatoms, distributed throughout the body of the water, are among the most common of the microscopic organisms producing objectionable odors and tastes. The extent of the taste and odor depends upon the type and concentration of the organisms present. For instance a certain blue-green alga in limited numbers produces a pleasant, slightly grassy odor with no unpleasant taste. This same organism, when present in large numbers and especially upon death and decay, produces a foul "pig pen odor" with a very disagreeable taste. At one time it was thought that it was only by decay that the organisms became odoriferous. It is now known that some living organisms have an odor that is natural and peculiar to them, as a fresh rose or an onion has. In most instances the odors are produced by compounds analogous to the essential oils. These odors have also been called "odors of disintegration" because they are most noticeable when the organisms break up and liberate oil globules in the water.

It is the esthetic and physical quality of water which is affected by the conditions brought about by algae and other microscopic organisms. This is true to such an extent sometimes that people turn from a safe supply, because of tastes and odors, to an unsafe supply. The latter, though clear and sparkling in appearance, may be contaminated with harmful bacteria. This

fact alone makes the control and elimination of microscopic organisms in drinking water supplies of much importance.

Due to changed conditions and sources of supply within the past several years trouble has been experienced in some Alabama cities. A later article will discuss methods of odor control and elimination of microscopic organisms and other odor producing factors in water supplies.

CURRENT STATISTICS

State Department of Health

*PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA

	1932 June	1932 May	Total Cases to Date	
			This Year	Last Year
Typhoid	54	27	266	200
Typhus	29	9	64	17
Malaria	188	132	535	670
Smallpox	42	52	425	255
Measles	34	38	253	8970
Scarlet Fever	31	25	481	774
Whooping Cough	176	178	1015	463
Diphtheria	42	38	522	533
Influenza	98	154	2557	5744
Mumps	51	139	706	1005
Poliomyelitis	0	1	11	23
Encephalitis	2	3	8	27
Chickenpox	44	93	854	1447
Tetanus	8	5	31	15
Tuberculosis	339	437	2294	2707
Pellagra	108	150	363	645
Meningitis	4	7	38	170
Pneumonia	88	143	1817	2759
Syphilis	230	191	1085	783
Chancroid	2	4	27	29
Gonorrhea	119	119	724	813
Ophthalmia Neonatorum	0	2	12	8
Trachoma	0	0	0	2
Tularemia	2	4	23	5
Udulant Fever	1	4	6	7
Dengue	3	0	2	1
Rabies	0	0	0	0

*As reported by physicians and including deaths not reported as cases.

PROVISIONAL MORTALITY STATISTICS Alabama, May 1932

	Number of Deaths Registered May 1932			Annual Rate per 100,000 Population		
	White	Black	Total	May 1932	May 1931	May 1930
ALL CAUSES	1150	1026	2176	947.4	1017.7	1123.9
Typhoid fever	2	5	7	3.0	2.2	4.0
Smallpox		1	1	0.4		
Measles					8.3	6.2
Scarlet fever					1.3	
Whooping cough	16	5	21	9.1	4.8	10.2
Diphtheria	4	1	5	2.2	1.3	2.2
Influenza	44	29	73	31.8	36.3	33.6
Pneumonia, all forms	76	67	143	62.3	79.2	92.1
Poliomyelitis	1	1	2	0.4	1.7	0.9
Tetanus	5	1	6	2.6	1.3	2.7
Tuberculosis, all forms	73	107	180	78.4	90.6	83.7
Tuberculosis, pulmonary	70	98	168	73.1	78.8	74.8
Malaria	2	4	6	2.6	2.6	8.4
Cancer, all forms	90	34	124	54.0	55.1	54.0

Diabetes mellitus	14	3	17	7.4	10.5	8.0
Pellagra	11	16	27	11.7	16.2	18.6
Cerebral hemorrhage, apoplexy	70	58	128	55.7	66.1	54.9
Diseases of heart	160	94	254	110.6	129.1	129.7
Diarrhea and enteritis						
Under 2 years	23	20	43	18.7	9.6	28.8
2 years and over	13	9	22	9.6	9.2	12.8
Nephritis	99	100	199	86.6	78.0	105.8
Puerperal state, total	19	22	41	17.8	14.9	19.0
Puerperal septicemia	3	9	12	5.2	4.4	6.2
Congenital malformation	10	2	12	5.2	7.9	4.0
Congenital debility and other diseases of early infancy	77	38	115	50.1	49.5	67.3
Senility	16	21	37	16.1	19.7	16.8
Suicides	17	2	19	12.6	9.2	10.6
Homicides	15	33	48	20.9	20.1	11.5
Accidental burns	5	3	8	3.4	5.2	5.3
Accidental drownings	6	2	8	3.4	3.1	6.2
Accidental traumatism by firearms	4	3	7	3.0	6.1	4.0
Mine accidents	2	2	4	1.7	1.3	1.3
Railroad accidents	4	4	8	3.4	3.1	5.7
Automobile accidents	13	10	23	10.0	15.3	15.9
Other external causes	27	17	44	19.2	14.0	22.1
Other specified causes	174	159	333	144.9	151.9	110.0
Ill-defined and unknown causes	58	154	212	92.3	91.9	107.6

Book Abstracts and Reviews

New and Nonofficial Remedies, 1932, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1932. Cloth. Price, postpaid, \$1.50. Pp. 492. lvi. Chicago: American Medical Association.

The recognition of a preparation for inclusion in this book singles it out from the host of new products of the pharmaceutical manufacturers as being a worthwhile addition to the existing armamentarium of the practicing physician. To be thus distinguished it must be shown, under the impartial scrutiny of the carefully chosen group which is the Council on Pharmacy and Chemistry, that it has acceptable evidence of therapeutic usefulness and that it is marketed in accordance with the honesty and straightforwardness envisaged by the excellent Rules which have been the outgrowth of the Council's quarter century experience in appraising the merits of new drugs.

In accordance with its custom of keeping the annual editions of New and Nonofficial Remedies in the forefront of current medical thought, the Council offers in this volume the newly revised articles: Barbitol and Barbitol Compounds; Fibrin Ferments and Thromboplastic Substances; Liver and Stomach Preparations; Mercury and Mercury Compounds; and Ovary. Perhaps the most noteworthy new preparations admitted are: nupercaine-Ciba, a local anesthetic; pentobarbital sodium, a barbituric acid derivative; and iopax, a new preparation for roentgenologic use. All of the ovary preparations formerly described are omitted and none of the new standardized preparations are described, although the names Theelin and Theelol are recognized in the revised general article. Another change of importance is the classification of articles formerly listed as "Exempted" under the heading "Accepted but Not Described." There is the usual excellent index and the augmented Index to Proprietarys Not Included in N. N. R.

NEXT MEETING
MONTGOMERY
APRIL 18-21, 1933

THE JOURNAL

OF

The Medical Association of The State of Alabama

Published Under the Auspices of the Board of Censors

Vol. 2, No. 3

Montgomery, Ala.

September 1932

PROGRESS TOWARD IDEAL OBSTETRICS*

PERCY W. TOOMBS, M. D.
Memphis, Tennessee

That ideals are but seldom realized is the common experience of mankind. That this is so probably works for the greater progress of the race. Were we once to become thoroughly satisfied with what we had attained, all incentive toward future endeavor would be removed. That is why I have selected progress toward an ideal for my subject. I hope and believe that the progress in the particular field of medicine in which I am chiefly interested has been great, but I am fully aware that the ideal is still removed very far into the uncertain future, while the many unsolved problems which face us at the present moment call for the exercise of the highest powers of each and every one of us.

In casting about for a yardstick by which I could measure how far obstetricians have traveled along their chosen path in the course of a century, or even less time. I came upon a highly interesting exposition of how our art was practiced a hundred years ago. This is a recently published review of the records of 508 obstetric cases admitted to the lying-in ward of the New York Hospital, during a period extending from 1809 to 1825. Not all the 508 patients were delivered in the hospital. The notes on 39 cases give reasons why—usually “by request”—which were amplified on occasions by such annotations as the following:

“By the elopement of a drunken husband this woman was compelled to seek refuge in this house and now by the return of the same vagabond, she is compelled to leave it undelivered.”

Hawks and Dennen, the authors of this delightful piece of obstetric literary research,

*Read before the Association in annual session, Mobile, April 20, 1932.

have compared this ancient record with that in the same service during the years 1926 and 1927. In the earlier series the mortality rate for mothers was 2.5 per cent; in the recent series, 0.247 per cent. Fetal mortality was 8.7 per cent in the first quarter of the nineteenth century, which, by making certain allowances for stillbirths and neonatal deaths, the authors correct to 7 per cent. The total fetal and neonatal mortality in twenty-eight weeks in 1927, during which there were 2,420 viable births was 5.57 per cent, but one notes with considerable surprise that the proportion of abnormal and prematurely born babies is far greater at present than it was in the earlier days of this republic. It is especially noted that the placenta was removed manually eighteen times in the earlier series, yet only one of these women went to swell the percentage of maternal mortality. This the authors regard as “a most remarkable record considering the ignorance of infection and lack of anesthesia” and I most heartily agree with them. In concluding this interesting account, they add, “This old record gives evidence of the great progress which has been made in obstetrics and makes us appreciate our equipment. Most of the aids now considered essential were unknown then. Pelvimetry, prenatal care, social service, hospitalization, laboratory facilities, trained nursing, aseptic technique, modern methods of diagnosis—including roentgenography—analgesia and anesthesia, the modern delivery room, varied operative procedures adapted to the individual case in interest of both mother and baby, improved emergency measures, immediate repair of lacerations, better knowledge of pathology, improved methods of observation and treatment, and finally, the aid of the internist and pediatrician, are all factors and advances in modern obstetric practice. These advantages have made

childbirth comparatively painless and, in this series of cases, ten times as safe for the mother and at least three and one-half times safer for the child at term."

During the past few years it has seemed that medical literature—or at least that part of it relating to obstetrics—has become decidedly pessimistic about improving humanity's chances of life. We are told that cancer is on the increase—not proportionately but actually; that, though the total death rate from tuberculosis appears to have declined remarkably, among certain classes of the population—notably young girls of the middle and upper classes, it is steadily increasing. We hear especially about the great maternal and fetal mortality rate in our own country—a rate so high as to make motherhood an infinitely more dangerous occupation than using or making firearms. If it is indeed safer for a woman to work in a dynamite factory than to bear a child, the practice of obstetrics is in a bad way. Surely we should be able to control the conditions surrounding labor and the puerperium to prevent the concurrence of those factors which produce septicemia, as well as the manufacturers of explosives manage to prevent the concurrence of factors which, when united, produce explosion! The serious consideration of this—literally—vital problem has now been going on for some time, but we have not, as yet, seen any great diminution in the rate of maternal mortality in the United States.

Therefore, to read something like the account of the New York Hospital's experience in the early days brings a ray of hope into the prevailing gloom. Badly off as we are—and I say this in no spirit of raillery, for this question of excessive maternal mortality is one with which I have concerned myself particularly for a long time—there is a certain comfort in knowing that conditions might be—and have been—infinately worse. In the list just quoted are suggestions of modern accomplishments which have undoubtedly made the world safer for maternity; even if we are only too well aware that the ideal is still far removed let us not be wholly discouraged. It is my intention to take this summary as a text and to preach from it a homily; let us count over our weapons, improve those that we

find inadequate or antiquated, and, if they then seem sufficient, make use of them to the greatest advantage to fight our way toward our ideal in obstetric practice. But if these are not enough, let us forge new arms and gird on these for our fight. But come what will, let us not permit any cessation of hostilities.

First of all it is pertinent to ask: What are the ideals of obstetrics? These were so well defined a few years ago by a former master of the Rotunda Hospital in Dublin that I feel I cannot improve upon Sir Henry Kellett's own words:

"The first is to bring a mother safely through a normal pregnancy, labor and puerperium. The second is to insure the delivery of a healthy infant. The third is to leave the mother in as normal condition at the end of the puerperium as she was at the beginning of pregnancy."

"Similarly there are three basic essentials on which this art is built—knowledge, skill and suitable environment. Knowledge is necessary to avoid both complications and interference, and to treat the one and regulate the other should it become inevitable. Skill is necessary to obtain the fruits of knowledge. Suitable environment, by which I mean the circumstances under which a labor takes place, is necessary in order that the normal and abnormal events of labor may be conducted in an orderly and aseptic manner."

Certainly this seems a simple enough creed. Once we can secure the "basic essentials" the ideal results would seem to follow inevitably. The comparison just made demonstrates beyond doubt that, in knowledge, skill and improved environment, there has been an enormous increase during the past century. That there is still room for infinitely greater improvement, abundant testimony is forthcoming on every hand. The subject of medical education as a whole has been much under discussion ever since Flexner made his revolutionizing survey in 1909. The teaching of obstetrics came in for its share of criticism at that time, and has been more or less under fire ever since, yet the improvement in this division of the medical curriculum has by no means kept pace with that in other departments of instruction. In 1930 the American Medical Association's Council on Education gave it as their opinion that there had been a vast improvement in the teaching of obstetrics since the beginning of the present century, especially since the promulgation of the "model curriculum" which the Council put

out in 1909. They reported that all medical schools giving a full four-year course now have regular staffs for the teaching of obstetrics; that the time devoted to the teaching of obstetrics now compares favorably with that devoted to the teaching of surgery; that the requirements of the model curriculum had been very generally met by the medical schools of the country at large.

At the time of the publication of this report there were many of us who felt that it was altogether too rosy a vision of the actual state of affairs. Palmer Findley voiced our dissatisfaction at the time in an able article entitled "The Teaching of Obstetrics and Maternal Mortality." It was his opinion that many of our medical schools, though of the higher order, give overabundant attention to clinical surgery and scant recognition to clinical obstetrics; that there is yet a very general failure to recognize how important a part of general medical practice is the obstetric service the "family doctor" is called upon to render; and that until this is taken into consideration in apportioning the amount of time a student is to spend upon the different subjects he must master, we will see but little progress toward the ideal of obstetric education.

When Dr. Findley called upon me to comment upon the Council's report, I replied in part as follows:

"I am importuned daily to teach my students *operative* obstetrics. I believe students should be taught normal obstetrics during their collegiate course and given the most essential of emergencies in obstetric practice. I believe operative obstetrics should be given in a postgraduate course, just as the refined technique of the various specialties in general surgery are now given. Does the general practitioner of medicine enter the special field of eye, ear, nose and throat, or that of specialized abdominal surgery without special preparation? If he does not, why should he be allowed the privilege of bartering human life at its very beginning without preparation? Until provision is made in the curriculum of a medical school for such preparation, the present distressing high rate of mortality will continue. If there is to be any reduction in maternal mortality there must be a more widespread knowledge and clearer understanding of the importance of the principles underlying proper obstetric care. With proper supervision of the pregnant woman, the lives of many mothers would be saved, who are otherwise sacrificed upon the altar of maternity."

Since I wrote this I have found no occasion to change my views. The tendency toward operative obstetrics has not appreciably abated, although I believe that the obstetric profession as a whole is somewhat more alive to the gravity of the situation than they were even two years ago. Admitting that there is not enough time given to the subject of obstetrics as a whole—that there is indifference concerning the providing of sufficient clinical experience for the undergraduate—it is a crying evil that these scant resources should be still further curtailed by attention to the abnormal and pathological, rather than the normal and physiological. It is the opinion of Dr. J. R. McCord that our greatest educational failure is lack of instruction in the mechanism of labor. "With the basic principles of obstetrics thoroughly mastered", he remarks sagely, "the technical details of delivery, whether in the home or in the hospital, are simple and become of minor importance." Dr. McCord thus places the emphasis primarily upon Jellet's first essential, assuming—and rightly—that the first will breed the second. He goes on to say that the average hospitals of the smaller cities and rural communities have few men who are skilled in obstetrics. The general surgeon, confronted with a case of complicated labor, will follow the line of least resistance. Because but few general surgeons have a full knowledge of the mechanism of labor—and such knowledge is just as important in the abnormal case as in the normal, there is likely to be resort to cesarean section without full consideration of all the varied factors involved. Hospitals are not a panacea for bad obstetrics. "Results in hospitals, if statistics are to be believed, are quite as deplorable as those in the home. It is not a question as to whether the patient is, or is not, in a hospital, but how much of the fundamentals of obstetrics does the man know who is attending her."

The rather revolutionary suggestion is put forward by Jellet, that all normal cases should be turned over to midwives, leaving only the complications to be dealt with by graduates in medicine. He limits this, however, by insisting that the training of midwives must be put on a high plane to satisfy all ordinary demands. This is perfect-

ly possible, but is an ideal far in advance of what prevails at present. He also stipulates that most rigid standards of prenatal care must prevail, and herein lies the greatest value of the new system he is suggesting. Given thorough and repeated physical examination during the entire course of pregnancy, by a competent and specially trained medical graduate, any abnormalities with which the midwife was not competent to deal would be discovered before labor set in, except in very rare instances. Here is where the modern advantages, previously listed, would find their greatest practical utility. Obstetrics at present is regarded very generally as a poorly paid and highly exacting specialty, and an annoying and time-consuming feature of general practice. Train the medical student in the physiology of pregnancy and the normal anatomy of the child-bearing woman; give him a thorough course in the mechanism of labor, with abundant opportunities to observe and personally deliver a large number of both normal and abnormal cases; teach him to recognize obstetric abnormalities and accidents exactly as he is taught to recognize an abscessed appendix or a ruptured spleen, and it might then be possible to follow up Jellett's suggestion.

So much for knowledge; skill can only be obtained by the old recipe, which defined genius as an infinite capacity for taking pains. I have already outlined the manner in which I endeavor to put my own students in the way of acquiring it. It is not given to everyone to become a passable accoucheur, and it is plainly a mistake to think that it is one of the minor requirements for obtaining a medical degree. If it could be brought to pass that only those who evinced special aptitude should undertake the work at all, it would be indeed a close approach to the ideal!

In the report of the Committee on Maternal Welfare of the American Association of Obstetricians and Gynecologists, made in 1930, was a very interesting reference to the work done in the London East Side Maternity. Supervision of the patients admitted to this institution for delivery begins during the sixth or seventh month of pregnancy and is continuous thereafter. The women come regularly for examination, and are in addition visited by nurses at

weekly intervals, so that it will be known that the instructions given are being carried out, and necessary laboratory work may be facilitated. The practical value of such a system is put in evidence by the fact that there has been no death from eclampsia for more than ten years, although in the intervening time 20,000 women have been delivered. Only one very slight manifestation of eclampsia has developed in the last 8,000 patients. The report adds the significant comment: "In England, of course, a very large number of the deliveries are carried on by highly trained midwives who have physicians always on call. A record like the one above quoted makes one pause and realize what can be done."

In view of the conditions existing in Great Britain, Jellett's suggestion of relying more upon the properly trained midwife takes on greater significance. He stresses the haste likely to be felt by the general practitioner whose round of work is being held up by the delays so regularly associated with labor, especially in primiparae. To this is added the anxiety of her family "to get it over with as soon as possible," and the demands of the woman herself that she be relieved of pain. Here lies the urge to expedite matters by the employment of surgery. No matter how great the accoucheur's skill, it is cast to one side in the rush of "getting through". The midwife, who has no other work to call her aside, and who is less likely, on the whole, to be unduly influenced by the importunities of the family or the unreasonable demands of the patient, is likely to have more chance to exercise her skill than the medical graduate.

In Europe—more especially on the Continent—the midwife is a recognized social factor, and attends more than 80 per cent of all labors. In the Scandinavian countries, where maternal and fetal mortality is the lowest in the world, even a greater proportion of parturient women are confined to her unaided ministrations. With us the situation is diametrically opposite. There is a strong social prejudice against the midwife and this feeling is steadily seeping downward in the lower strata of society. It is only in those states largely populated by negroes that there is any very general employment of midwives; yet notwithstand-

ing, she remains an important factor in the present day obstetric situation, and any progress toward an ideal must take cognizance of her. It is a matter of pride with public health officials and others interested, in certain rural districts of New England to which large numbers of Poles and other people of Slavic origin have immigrated, that the younger women now seek hospitalization in constantly increasing numbers. This tendency they credit to the propaganda diligently spread ever since the first "Children's Year" was instituted in 1918 during our participation in the World War. But when one glances over the figures presenting the alarmingly high maternal and fetal mortality which hangs like a pall over the obstetric records of these same hospitals, and in the private practices of the same medical men who have been so industriously spreading the gospel of midwife abolition, and compares it with the low rates prevailing in the European countries from which these women came, one wonders whether it is matter for unqualified congratulations or not.

In reporting on *The Education of Midwives* at the White House Conference last year, Dr. McCord said, "At the present time the midwife is a necessity; she cannot be eliminated in some sections, and every effort should be made by the profession to improve her as rapidly as possible. This improvement should be brought about by local effort. . . . Recognized institutions for the training of midwives, which would assure preliminary education and proper training, must be established if present conditions are to be permanently improved. . . . They should be located in sections needing the services of midwives and where they will not conflict with the obstetric teaching work of medical schools." Here in the South, in particular, progress toward ideal obstetrics is extensively bound up in the progressive training of these women.

Consideration of the midwife, with the conditions under which most of her practice is conducted, brings us to Jellett's third basic factor, namely, *Environment*. Given the best conditions surrounding the patient going into labor, the chance of avoiding puerperal sepsis—still the prominent cause of maternal death—is immeasurably reduced. Yet even the strictest asepsis does not al-

ways seem to prevent a fatal termination. The hospital provides this—or at least is supposed so to do. Yet I have had occasion several times to mention that hospital figures are not conspicuously better than those of private practice where the woman is delivered at her own home. The cleanest, best-managed hospital in the world can do little for the obstetric patient whose accoucheur has not received proper training or, having been properly taught, neglects to practice what he has learned. As Jellett remarks, one may "find a medical man removing tonsils in the morning with the strictest aseptic ritual and a placenta in the evening with none. Yet the removal of a placenta is possibly the operation most fraught with septic possibilities of any in the whole field of medicine. . . . Regarding the environment which makes the treatment of obstetrical emergencies easy and safe, how many practitioners insist that the patient's room shall be so arranged that if, for example, postpartum hemorrhage should occur, its treatment can be immediately effective? How many practitioners carry with them the necessary appliances for its treatment and prepare them beforehand so that they may be ready for an emergency? And yet the sole excuse for the presence of a medical practitioner during normal labor is that he is available for the treatment of the unforeseen complications. Otherwise he is only an additional source of danger."

While teachers diligently emphasize the necessity of asepsis in obstetric work, they yet proclaim that a woman with a well-washed and shaved vulva, delivered by a man who understands the mechanism of labor, wears rubber gloves and does not make vaginal examinations, has a better chance of avoiding sepsis, even in the most filthy surroundings, than does she whose bed is of the most spotless linen, but her accoucheur so lacking in knowledge and skill that he must make continual investigations and run the risk which no amount of bichloride solution can ever counterbalance. It almost seems that our ability to command so many aids has made us careless about employing them properly. Just as physical examination is so often slighted or entirely omitted when dependance is placed upon laboratory tests, so may we place too much reliance up-

on an aseptic routine and the advantages of hospital conditions, and neglect to prepare for emergencies which these things are powerless to prevent or to cure, once they have arisen.

Moreover, a consideration of environment should not be limited to that in which labor itself is carried out. The surroundings in which pregnancy is passed have much to do with success or failure at the crisis. This brings us once more to the importance of prenatal supervision, and emphasizes the thought which must remain in the mind of each one who seeks to reach higher ideals of obstetric practice. In every branch of medical practice the onward march is along lines of *prevention*. When one counts over the scourges of former times which are now almost forgotten simply because we have learned to control them so perfectly that their incidence has been lowered almost to the vanishing point, it seems passing strange that we are still so far behind in forestalling the accidents and complications of maternity. Being born is a universal experience—infection with a contagious disease an unlikely accident. What line of preventive medicine can compare in importance with the prevention of maternal and fetal mortality? It is a work which demands the heart and hands of every member of our profession. The remotest rural practitioner has exactly the same opportunities to carry on this great work, as has he with laboratories and hospitals at his elbow and aseptically attired assistants standing in line to do his bidding. The method has value only as it is competently employed. Methods alone, be they ever so perfect, will never aid us to the attainment of ideal obstetrics.

899 Madison Ave.

DISCUSSION

Dr. J. R. Garber (Birmingham): The essayist we have just heard was the especially invited honor guest of the Section on Obstetrics, as the president just announced, but due to a combination of circumstances, we were fortunate in having him bring this paper before the general assembly.

Dr. Toombs enjoys a national reputation in the field of obstetrics. He is a peer among leaders. He devotes much time to teaching as he is professor of obstetrics in the University of Tennessee. He is a forceful writer and his facile pen contributes valuably to the literature each year and in molding obstetrical opinion. He is an earnest student and an indefatigable worker, but I would

rather look upon him as a pathfinder in obstetrics and one of the guards on the highway of posterity.

Dr. Toombs has presented a most academic and interesting paper and presented it in a most modest and pleasing way. I gather Dr. Toombs wishes to leave with us the idea that obstetrics is a constructive branch of medicine,—probably one of the most constructive that could be practiced. There are three things that might be gathered from his paper:

He wishes, first, the doctors to become a little more interested in obstetrics;

Second, we must not use obstetric practice as a mere by-product in medicine to promote the welfare of a surgical or medical practice, and

Third, that the obstetrician is not a technician, and that technique is subordinate to judgment in the discharge of such sacred duties.

The pistol, as we know, is a valuable weapon, but if put in the hands of men who lose their judgment readily, it does become a hazard. The same holds true in obstetric work. It is the doctors who are largely responsible for the high mortality Dr. Toombs referred to as existing in America.

We all work when we have ideals, and whether it is a materialistic idea or sentimental ideal depends on the individual and personally, I enjoy sentiment, and in closing I might leave with you a beautiful tribute to Motherhood. This writer has said,

"Mother, wife, sister and daughter are the most sacred names on earth;
Mother long since yielding the palm of victory here for the crown of glory there;
Standing wrapped in filmy loveliness between us and heaven;
Between that mysterious marginal line that separates the finite from the infinite;
Beckons us onward to higher and nobler purposes."

I am sure we are indebted to Dr. Toombs for coming to Mobile on this occasion and that we will profit immeasurably from the magnificent address delivered this morning.

Dr. Burr Ferguson (Birmingham): Dr. Toombs has spoken rather hopelessly on the infections all too often encountered in the puerperal state. This attitude is confirmed by the reports of the high mortality rates after childbirth in Tennessee and Alabama. For the information of Dr. Toombs and the Association I should like to read to you a letter just received from Dr. W. I. Howell of Lexington in which there is a distinct note of hope in the treatment of this infection so often resulting in death.

"I wish to ask some questions regarding your use of hydrochloric acid as I have used it successfully in three cases of puerperal fever. I have been asked to make a report of these clinical observations before the West Tennessee Medical Society in May, and I should like to comply with the request if I can get some further information from you. I read a paper of yours last year on pyogenic infections and hydrochloric acid and through it I was sufficient-

ly impressed to apply the principle in the treatment of a lying-in case. I delivered a girl of 15 years of age, 90 pounds in weight, of a girl baby weighing 12 pounds—it was a difficult breech presentation. Three days later it was reported to me that the patient had high fever. Thinking of a probable malaria, quinine was sent to the patient. When I saw her on the following day her temperature was 106, pulse 140, respiration 40. Pulse and respiration weak and irregular. I gave her ten cubic centimeters of hydrochloric acid solution intravenously and in less than thirty minutes she was bathed in a profuse sweat. One hour and a half after the injection her temperature was 103. One injection a day was given of the hydrochloric acid solution with a gradual decrease in the temperature until the fourth day when it was 99. On the fifth day I did not give an injection and when I was called to see her on the seventh day the temperature was 101. I gave at once another injection of the hydrochloric acid, the temperature returning to normal and continuing so.

When I saw her first there was a large mass in the left side low down. With each administration of the hydrochloric acid this mass became smaller until its complete disappearance”.

Dr. J. M. Weldon (Mobile): I would like to thank Dr. Toombs for his excellent paper. I think we are fortunate in having with us men of his caliber and standing.

There are two points I would like to emphasize, which were brought out by Dr. Toombs and which I think are among the most outstanding advances made in obstetric practice in the last fifteen years. One is the general change in the attitude of general practitioners toward the conduct of labor. They have ceased to consider this as a process of nature, and stand by and neglect their cases and allow avoidable complications to arise. The obstetrician of today watches his case closely through labor and meets complications as they arise or by close observation he is able to avoid many complications.

We should be humane enough to try to relieve pain during labor by using the different methods of analgesia. Still, we should never allow the pressure of the parents and relatives to upset our judgment and cause us to become unnecessarily meddling. Neither meddlingness or dilatory negligence are in keeping with modern obstetrics.

Another thing that is outstanding in present day obstetrics is the emphasis placed on prenatal care. Probably fifty per cent of the mortality in obstetrics is due to eclampsia. Eclampsia is a thing we know little about; we know little new of its treatment or its cause. The best treatment of all is prevention. Prenatal care will prevent ninety-five to ninety-nine per cent of eclampsias. I might illustrate this by the fact that in our clinic here we deal with the lower element socially and many negroes, and we have averaged for the last several years only one eclamptic a year in the hospital among those who have attended our prenatal clinic. We think prenatal care is one of the most important phases in obstetric practice.

I just wanted to emphasize those two points and again thank Dr. Toombs for his wonderful paper.

Dr. L. J. Moorman (Oklahoma City): I am not going to discuss Dr. Toomb's paper, but with Dr. Toomb's permission, I would like to discuss him for just a moment. When I was a young man, rather mature, trying to get a belated education, along came two boys from Mississippi with a younger brother,—quite too young, it seemed to me, to be in college. That younger brother was Percy Toombs. I thought perhaps his parents had let him come along because the other boys were old enough to take care of him. However, I soon found out that he was capable of taking care of himself. I am very proud that I can claim to be his college mate.

He has gone to the top in his specialty, and as Dr. Garber has so beautifully said, he is not only doing good work, but he has become an important factor in the teaching of obstetrics, not only to undergraduate students, but to doctors throughout the country who have the privilege of hearing him.

I just wanted to say this, not that my friend Percy Toombs needs anybody to testify for him, but I want you to know I am proud of him.

Sometime ago I was reading about the work of Sir James Y. Simpson in the early development of anesthesia in obstetrics and I learned that Sir Walter Scott wrote to Sir James Y. Simpson and suggested this emblem to commemorate the great work he was doing in anesthesia in obstetrics,—a medallion with the form of a naked baby with this inscription on it, “Mother, did you know your child is out?”

Percy W. Toombs (closing): I am indeed grateful for your kindly expressions and particularly appreciative of the remarks of President Moorman and Doctor Garber whom I have known for many years and for whom I have an affectionate regard. The purpose of my address was to present some of the factors in the cause of high maternal morbidity and mortality and arouse in you an interest in our fight to save the lives of women who are being sacrificed upon the altar of maternity.

Olfactory Disturbances—In spite of the tremendous advance made in almost every branch of otolaryngology, the knowledge of olfaction remains, with few exceptions, the same as it was thirty years ago. There are many reasons for this, one of the most important being that it is possible to investigate this sense only from a subjective standpoint. Olfaction being regarded as a nonimportant sense, few rhinologists are sufficiently interested to publish case reports and interesting observations and to follow these with postmortem examinations. Until this is done, the true story of olfaction will never be written.—*Seydell: J. A. M. A. Aug. 20, 1932.*

ACUTE ILEUS*

By ALTON OCHSNER, M. D.
New Orleans

The early diagnosis and prompt institution of therapy is as important in acute ileus as in any other surgical emergency. The truth of this assumption is corroborated by Van Beuren's statement, "The longer a patient with intestinal obstruction lives before operation, the sooner he dies afterward". C. Jeff Miller has estimated that the mortality rate in acute intestinal obstruction rises approximately one per cent for each hour of procrastination.

The prognosis in acute ileus is dependent upon a number of factors, all of which must be considered in each individual case. As regards prognosis and therapy and also from the standpoint of clinical manifestations, it is necessary to differentiate the various types of intestinal obstruction: viz., (1) those which are located relatively high in the intestinal tract from those which are located in the lower portion of the alimentary canal, (2) those in which there is interference with the blood supply to the intestine from those in which an intact blood supply exists, (3) the mechanical from the adynamic or paralytic ileus.

The early recognition and prompt institution of therapy is especially indicated in "high" intestinal obstruction, i. e., obstruction in the duodenum or upper jejunum. The prognosis in such cases is very much worse unless prompt therapy is instituted. Everything else being equal, the higher the obstruction in the intestinal tract the more pronounced are the symptoms, the graver is the prognosis and the more urgent is the early relief of the obstruction. It is a well known clinical fact that even complete obstruction may exist for relatively long periods of time in the lower portion of the intestinal tract, especially in the large bowel, without especially endangering the life of the individual, whereas complete obstructions in the duodenum or upper jejunum, unless relieved, will almost invariably prove fatal within seventy-two to ninety-six hours.

It has long been known that a strangulated intestinal obstruction, i. e., one in which there is an associated interference with the blood supply to the gut, offers a poorer prognosis and the early relief of the obstruction is more imperative than in cases with simple obstruction. Interference with the blood supply to the intestine is important not only because of the danger of producing irreparable damage to the gut itself, but also because in the presence of strangulation the formation and absorption of toxins is apparently favored. Dragstedt, Dragstedt, McClintock and Chase have shown that interference with the blood supply to an obstructed gut markedly increases the toxicity. Probably as a result of the interference with the blood supply, the normal selective absorptive action of the mucosa is lost and absorption occurs, as suggested by Dragstedt and his co-workers, as it would from the normal peritoneum. Interference with blood supply may occur either in the mesenteric vessels or within the walls of the gut, as a result of increased intrainestinal pressure. The fact that interference with the blood supply to the intestine can occur within the wall of the gut is not generally appreciated and this factor may be responsible for the more marked symptoms which occur in cases of "high" intestinal obstruction. Owings, McIntosh, Stone, Weinberg, and Morton have shown that the intrainestinal pressure in "high" intestinal obstruction is much greater than that in obstructions lower down. Morton found that the normal intrainestinal pressure varies from two to four centimeters of water. After a twenty-four hour obstruction, the intrainestinal pressure in the duodenum and in the ileum is increased to 28 to 36 and from 4.5 to 5 centimeters of water respectively. These differences in pressure are due to the fact that the upper portion of the intestinal tract, the duodenum, and the jejunum are secretory, whereas the lower portion of the alimentary tract is absorptive. Morton found that the duodenum secreted five to ten times as much fluid as the ileum in a given time. As demonstrated by Dragstedt, Lang, and Millet, the intramural blood vessels of the upper portion of the intestinal tract are so arranged that an increase in intrainestinal pressure produces a greater

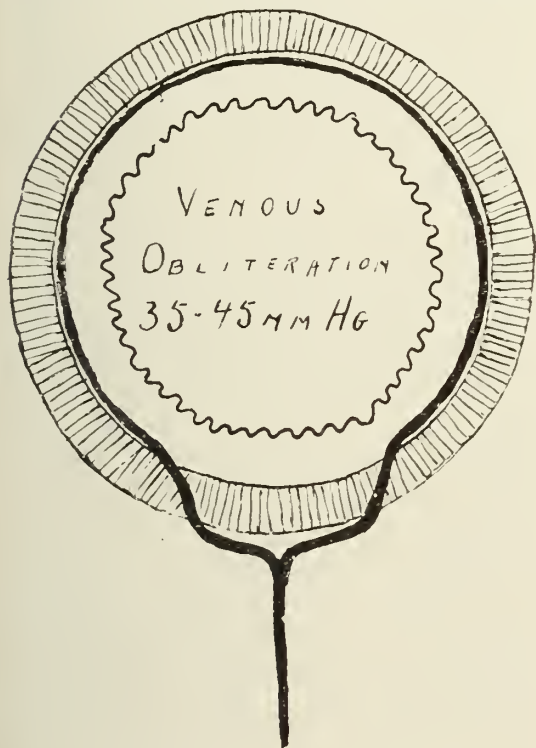
*Read before the Association in annual session, Mobile, April 20, 1932.

*From the Department of Surgery, Tulane University School of Medicine, New Orleans, Louisiana.

interference with the blood supply than a similar pressure in the lower bowel. They found that if a cross section of the bowel be represented by the face of a clock with the mesenteric attachment at six o'clock, the vasa recta pierce the muscularis in the case of the duodenum at approximately

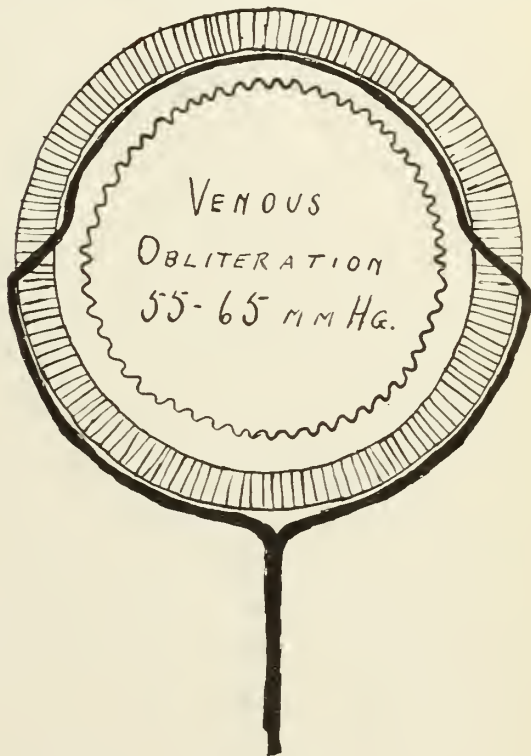
testinal pressure within the jejunum, ileum, and colon attained a height of from thirty-five to forty-five, fifty-five to sixty-five, and ninety-five millimeters of mercury, respectively.

The importance of the loss of the electrolytes of the blood in ileus has recently been



DUODENUM

28-36 MM Hg
AFTER 24 HOURS



ILEUM

4.5-5 MM Hg
AFTER 24 HOURS

Fig. I (Modified after Dragstedt, C. A.; Lang, V. L.; and Millet, P. F.; Arch. Surg., 18:2257, 1929). Diagrammatic drawing showing the position of the intramural vessels of the duodenum. As is seen in the illustration the vessels pierce the muscularis in the proximity of the mesentery and course for a relatively long distance between the muscularis and the mucosa. Venous obliteration occurs after 35 to 45 mm. of mercury pressure. A twenty-four hour obstruction in the duodenum causes a 28 to 38 mm. of mercury pressure.

five and seven o'clock (Figure I), and in the case of the jejunum and ileum at three and nine o'clock (Figure II), and in the case of the colon at ten and two o'clock (Figure III). They also found that the flow in the intramural veins ceased when the intrain-

Fig. II (Modified after Dragstedt, C. A.; Lang, V. L.; and Millet, P. F.; Arch. Surg., 18:2257, 1929). Diagrammatic drawing showing the relative intramural and extramural positions of the vessels of the ileum. The vessels pierce the muscularis about midway around the circumference of the gut and for the main portion lie between the muscularis and the mucosa. Venous obliteration occurs after 55 to 66 mm. of mercury pressure. A twenty-four hour obstruction of the ileum produces a pressure of from 4.5 to 5 mm. of mercury.

emphasized. Hartwell and Hoguet showed experimentally as early as 1912 that the life of an animal could be prolonged by the administration of saline solution. The importance of this was not appreciated until

the investigations of Haden and Orr, who demonstrated conclusively that in ileus a decrease in the blood chlorides (hypochloremia) occurs. As the result of the lowering of the blood chlorides, there is frequently an associated increase in the carbon dioxide combining power of the plasma (alkalosis).

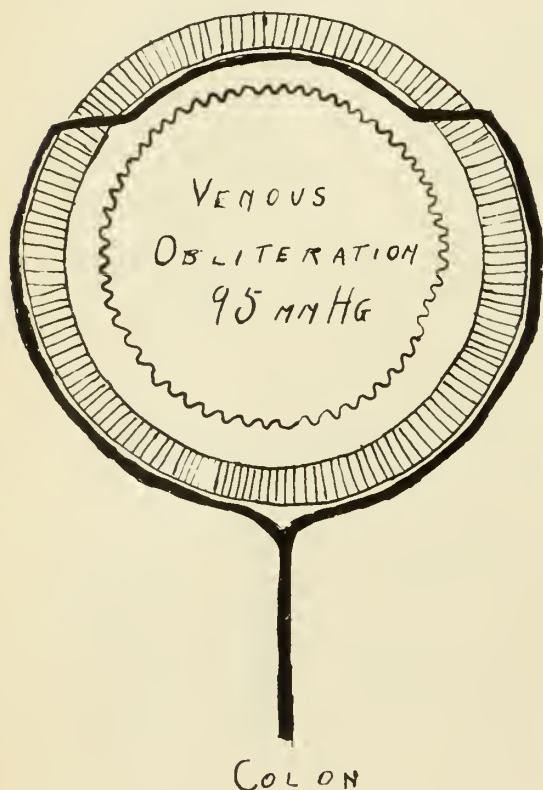


Fig. III (Modified after Dragstedt, C. A.; Lang, V. L.; and Millet, P. F.: *Arch. Surg.*, 18:2257, 1929). Diagrammatic drawing showing the relative position of the intramural and extramural vessels of the colon. The vessels pierce the muscularis relatively close to the antimesenteric border so that a small portion of them lie between the muscularis and mucosa. Venous obliteration occurs when a pressure of 95 mm. of mercury is obtained.

As a result of the recent researches of Pearse, Morton, White, and Fender, in which it was shown experimentally that upon the alterations in the electrolyte content of the blood depend the symptoms and progress of the clinical manifestations in "high" intestinal obstruction, it has been accepted by many that the clinical picture in "high" intestinal obstruction is the result of these disturbances in the electrolyte content of the blood. This assumption is undoubtedly true in all cases of intestinal

obstruction in which there is no interference with the blood supply to the gut. However, it is in this type of case that a toxemia does not develop. In the cases of acute obstruction in which there is an associated interference with blood supply to the intestine, the changes in the electrolyte content of the blood are significant, but are probably not the only factors which are responsible for the clinical picture as correction of these blood chemistry changes will neither stop the progress of the condition nor prevent the death of the individual.

From the standpoint of prognosis and therapy, it is extremely important to differentiate the mechanical from the adynamic variety of ileus. The former is relatively simple to treat and good results are obtained, if the obstruction is promptly relieved. Adynamic ileus is, however, much more difficult to treat and the prognosis therefore is much more grave.

CLINICAL MANIFESTATIONS

Clinical manifestations in acute ileus vary according to the type, the location, and the presence or the absence of strangulation. As mentioned above, the higher the obstruction, the more marked are the symptoms and the more fulminating the course. In mechanical obstruction in which there is a hindrance to the fecal stream, the symptom picture is characteristic. Colicky, intermittent pain due to peristaltic rushes which are an attempt on the part of the bowel to overcome the obstruction, is characteristic. A series of cramp-like pains lasting from a few seconds to a minute or more followed by periods of complete rest signify hyperperistalsis of a hollow viscus. Obstipation is not an early manifestation of acute mechanical obstruction and the diagnosis should never be delayed because it is not present. Not infrequently, a history of one or more evacuations of the bowel after the onset of symptoms is obtained. This is undoubtedly due to the fact that hyperperistalsis occurs below as well as above the obstruction, the former evacuating the distal bowel to the point of obstruction. Evacuation of the lower bowel by enemata has been shown by Wangenstein and Goehl to be of no diagnostic importance in mechanical obstruction. They found in experimental intestinal obstruction that not infre-

quently following an enema there is an expulsion of both gas and feces, which also could be demonstrated roentgenologically. This, too, is because the bowel distal to the point of obstruction becomes evacuated. Vomiting is frequently an early sign in "high" intestinal obstruction, but it invariably occurs late in obstructions of the lower portion of the intestinal tract. Vomiting is usually the result of reversed peristalsis, which is an attempt by the intestinal tract to rid itself of its contained products. Abdominal distention is almost invariably a late phenomenon. In the "high" obstructions, death occurs before distention can become marked, and distension occurring in the "low" obstructions occurs only after a considerable period of time.

Auscultation of the abdomen should never be neglected in cases of acute ileus. In the presence of mechanical obstruction the peristaltic sounds are definitely increased, which can be easily determined by auscultation of the abdomen. In the adynamic type of ileus, the peristaltic sounds are either decreased or absent. Shortly prior to complete cessation of all intestinal movement, a characteristic tinkle, which is heard on auscultation of the abdomen and which is due to the movement of the accumulated gas and fluid in the intestine, is of diagnostic importance.

The laboratory findings in acute ileus are of importance, less from a diagnostic than from a prognostic and therapeutic point of view. Characteristically, in "high" intestinal obstruction and in those cases of obstruction low in the intestinal tract which have existed long enough for the changes to occur, there is a decrease in the plasma chlorides, and, as a result of this, an increase in the carbon dioxide combining power of the plasma (alkalosis). Usually as a result of the vomiting and the inability to take fluids, dehydration is a prominent factor. In the terminal stages, there is an increase in the non-protein nitrogen content of the blood. Whenever possible, these determinations should be made, as they are a great aid as regards prognosis and treatment. If the services of a laboratory are not available, however, one may safely assume that a hypochloremia exists and fluids and chlorides in the form of normal saline solution or slightly hypertonic

sodium chloride solution should be administered.

DIAGNOSIS OF ACUTE ILEUS

As emphasized above, the early diagnosis of acute ileus, both in the mechanical and the adynamic varieties, is especially important. The diagnosis of acute mechanical ileus is relatively easy if the condition is only kept in mind. Of paramount importance is the history of the patient. *A patient with a hernia or one having had a previous abdominal operation or peritonitis who develops the characteristic intermittent, colicky, cramp-like pain should be considered as having mechanical intestinal obstruction until proved otherwise.* In such a case, there will be almost invariably an increase in the peristaltic sounds as determined by auscultation of the abdomen. Vomiting may or may not be present, depending upon the location of the obstruction. The abdomen is usually not distended and usually there is no abdominal tenderness.

A plain roentgenogram of the abdomen is of great diagnostic importance. Obviously, a patient with a suspected intestinal obstruction should not receive an opaque substance by mouth, as it is a well known fact that not infrequently an incomplete obstruction can be completely blocked following the ingestion of an opaque medium. In cases in which the obstruction is suspected in the large bowel, the administration of a barium enema is justified. Considerable information, however, may be gained from a "plain" roentgenogram of the abdomen without the administration of contrast substances. Schwarz, Case, Ochsner, Granger, and others have emphasized the importance of this diagnostic procedure. Such roentgenograms show a dilatation of the loops of bowel due to the gas and fluid which is contained in them. Many roentgenologists feel that the accumulation of gas is sufficient to make a diagnosis of ileus. However, when possible, it is desirable to obtain the roentgenogram in such a way that the junction between the accumulated intra-intestinal fluid and the gas can be visualized. This is made possible by taking an anterior-posterior roentgenogram of the abdomen of the patient in the upright position, or a lateral roentgenogram with the patient in the supine posi-

tion. In this way, the roentgen rays will parallel the surface between the gas above and the fluid below and a definite contrast can be demonstrated. I have recently shown that the first change which can be demonstrated roentgenologically in experimentally produced ileus is an accumulation of gas, so that in the early cases of ileus, the presence of gas alone is of diagnostic importance. However, because the picture is so much more definite when multiple fluid levels are present, it is better to obtain the roentgenograms in such a manner that fluid levels can be demonstrated. If only gas is present in the intestine, it can be visualized on a plate taken in this manner as easily as one taken in the conventional manner. Experimentally, I have found that x-ray evidence could be demonstrated within three hours after simple obstruction and between one and two hours after strangulated obstruction of the intestine. The value of this diagnostic procedure is thus apparent. These changes occur both in the mechanical and in the adynamic varieties of ileus.

Whenever possible, it is desirable to differentiate preoperatively between the mechanical and adynamic types of ileus. Wagner, W. J. Mayo, and Willard Bartlett, Jr., have suggested that spinal analgesia might be employed as a diagnostic measure, differentiating these two forms of ileus, reasoning that the former would not be affected by the analgesia, whereas the latter would be relieved in the majority of instances. That this procedure is not entirely reliable is shown by Duval's statistics. Duval found that an evacuation of the intestine was produced in 15 per cent of the cases of mechanical ileus in which a lumbar analgesia has been performed. This is undoubtedly due to the fact that the increase in peristalsis which is produced by a lumbar analgesia occurred both below as well as above the point of obstruction.

TREATMENT

The early relief of mechanical ileus has already been emphasized. In both the mechanical and the adynamic ileus the combating of dehydration, hypochloremia, and alkalosis is of importance as a preoperative procedure. No time need be lost in the administration of such fluids. An intrave-

nous infusion of one per cent normal sodium chloride solution can be performed while the operating room is being prepared. This should be done in all cases of ileus, even though control blood chemistry determinations are not available. If possible, such determinations should be made as they are excellent indications of the need of such therapy.

Gastric lavage in order to empty the stomach of its contained contents, which especially in "high" intestinal obstruction have been regurgitated from the intestinal tract, should be performed. This is especially important because of the danger of possible aspiration of regurgitated material during the operation. After thoroughly washing the stomach with large quantities of warm water heated to 115 degrees Fahrenheit, it may be desirable to leave the gastric tube in place during the operation in order to evacuate any material which may be regurgitated into the stomach during the operative manipulation.

The choice of an anesthetic is of utmost importance. General anesthesia should not be used because of the danger of possible aspiration of regurgitated gastric contents. Either a spinal or splanchnic analgesia, according to the technic of Kappis, or local infiltration of the abdominal wall is to be preferred. Care must be taken, after making the incision through the abdominal wall, to prevent evisceration of the intra-abdominal contents. An incision only large enough to admit the entrance of the hand should be made, and careful exploration of the abdomen by means of the hand can be performed without a great deal of difficulty. Considerable surgical judgment is required to determine exactly what should be done in each individual case. If the patient's condition will not permit it, simple drainage of the distended loop above a point of mechanical obstruction by means of an enterostomy should be done. *It is far better to have a living patient with an enterostomy opening above the point of obstruction and with the obstruction still present than a dead patient who has been relieved of the underlying lesion entirely.* Not infrequently, the relief of the mechanical obstruction is extremely simple, such as division of a band of adhesions or the reduction of a hernia which is responsible for the occlusion.

Following the relief of the obstructing lesion, either by removing or short-circuiting the lesion or by enterostomy, postoperative care of the patient is extremely important. Nothing should be given by mouth until normal peristalsis is reestablished. As the patients are dehydrated, they should receive from three to five liters of fluid containing sodium chloride every twenty-four hours. The fluid should be given either subcutaneously, intravenously, or rectally. Of greatest importance is the replacement of the chlorides and this should be done either in the form of normal, 1 or 2 per cent sodium chloride. Hartmann's solution which contains the normal electrolytes of the blood is also valuable. Whenever possible, repeated determinations of the plasma chlorides and the carbon dioxide combining power of the plasma should be obtained. The use of glucose infusion alone without the combination of insulin is probably to be questioned, because of recent investigations in our laboratory by Gage, Cutting, and me. It was found that glucose infusions invariably decreased the activity of the intestinal tract both in the normal and in the obstructed intestine, whereas the administration of glucose and insulin or the administration of glucose preceded by insulin did not produce this inhibiting effect. These observations are based entirely on animal experiments, and even though the results cannot be transferred to the clinic without reservations, the results are conclusive enough for one to watch the effect which glucose exerts on the intestine in ileus.

Repeated gastric lavage should be employed until a patient has stopped vomiting or has no nausea. Heat to the abdomen in the form of electric light tent is of great value as a stimulant to the intestine. Muller believes that in paralytic ileus, there is a decreased movement of the intestinal tract and an associated increase in secretion. Because of the viscerosplanchnic balance, he believes that the application of heat to the abdomen by producing a dilatation of the peripheral vessels causes a contraction of the splanchnic vessels. In so doing, the secretion is diminished and motility is increased. Heat to the abdomen has been in our hands an extremely valuable agent in stimulating peristalsis.

The treatment of the adynamic ileus is much more difficult than the treatment of the mechanical variety. Adynamic ileus may occur as a result of peritonitis, be associated with systemic infections, or it may follow and be superimposed upon a mechanical obstruction. Not infrequently following the relief of the mechanical obstruction, the adynamic ileus, which resists all therapy, persists. That many of these cases of adynamic ileus are the result of a hyperstimulation of the splanchnic nerves has been shown by the researches of Ochsner, Gage, Cutting, and others. In these cases, a great deal can be accomplished by splanchnic block either in the spinal canal by means of spinal analgesia or in the retroperitoneal space by means of splanchnic analgesia. We have shown experimentally, and believe that we have been able to substantiate it clinically, that splanchnic analgesia is more efficacious than spinal, both as regards its stimulating effect on the gut and also because less marked blood pressure changes occur following the former than the latter. If a splanchnic block, either as a spinal or splanchnic analgesia, is to be used in the treatment of adynamic ileus, it is important that none of the frequently employed blood pressure raising drugs, such as epinephrine or adrenalin, be used. This is because these substances stimulate the sympathetic system at the myoneural junction, distal to the point where the block was produced.

There has been considerable controversy concerning the efficacy of drugs in the treatment of adynamic ileus. We have shown in the experimental laboratory at Tulane that most of the frequently employed drugs as stimulants to the gut are valueless. Pituitary extracts which are probably more frequently employed than all the others have been very disappointing. We found that with but few exceptions instead of an increase in intestinal tone and activity occurring following the administration of these extracts, an actual decrease occurred. The only drug which we found was of any value experimentally as regards its stimulating effect on the intestine was physostigmine or eserine. The use of hypertonic sodium chloride solutions as originally suggested by Hughson and Searff has been of value in our hands, both ex-

perimentally and clinically. If employed, however, it should be used extremely cautiously and strengths not exceeding 15 to 20 per cent should be used. The dose varies from 10 to 15 cc., and this amount should be administered very slowly.

In our hands, however, the most efficacious way of increasing peristalsis in ileus consists of splanchnic block, either by spinal or splanchnic analgesia; the latter, however, is to be preferred.

The value of enterostomy in the treatment of adynamic ileus is a mooted question. An enterostomy is definitely of less value in the treatment of adynamic ileus than in the treatment of the mechanical obstructions in which peristalsis is normal. An enterostomy tube introduced into a loop of intestine which is paralytic will drain only that particular loop. Therefore, the results which are to be expected from an enterostomy in adynamic ileus are relatively few. If, however, the segment of gut involved is relatively short, considerable can be accomplished by draining a single loop. If enterostomy is to be used in the treatment of diffuse adynamic ileus, certainly multiple enterostomies should be done.

SUMMARY AND CONCLUSION

1. In all cases of acute ileus, it is necessary to determine the type of ileus; i. e., whether it is a "high" or "low" obstruction, whether it is simple or strangulated and whether it is of the mechanical or paralytic variety, because upon these factors depend clinical manifestations, the prognosis, and the treatment.

2. The diagnosis of ileus is not difficult if the condition is only kept in mind. Of great diagnostic importance is a history of a previous abdominal operation or infection. Colicky, cramp-like pains associated with increased peristaltic sounds are important diagnostic symptoms and signs. The absence of peristaltic sounds occurs in adynamic ileus.

3. Plain roentgenograms of the abdomen taken in such a way that multiple fluid levels can be demonstrated are of diagnostic importance.

4. Treatment of acute ileus consists of early removal of the mechanical obstruc-

tion in the mechanical variety. The pre-operative and postoperative administration of sodium chloride solutions in order to combat a hypochloremia and alkalosis is indicated. Caution should probably be used in the administration of glucose alone without combining it with insulin.

5. Treatment of adynamic ileus is a more difficult problem. Splanchnic block, either by spinal or splanchnic analgesia, is of diagnostic importance. Drugs are valueless with the exception of eserine.

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PEPTIC ULCER*

FROM THE GENERAL PRACTITIONER'S STANDPOINT

W. R. CARTER, M. D.,
Repton

In 1829 the French pathologist, Cruveilhier, described ulcer of the stomach for the first time as a pathologic entity. He definitely distinguished it from cancer of the stomach.

ETIOLOGY AND PATHOGENESIS

The etiology of peptic ulcer and its pathogenesis are still obscure. Rosenow is of the opinion that focal infection in some remote part of the body, such as the teeth, tonsils, sinuses, appendix, gallbladder, etc., is the primary cause of peptic ulcer. Reeves has shown that the ulcer-bearing areas of the stomach and duodenum are especially liable to attack by infection because of the peculiarities of their blood supply. The causative role of the nervous system is being more emphasized. Dr. Witten B. Russ states that the ulcer patient belongs to a distinct type and from birth is predisposed to the development of ulcer. This type is the high-strung, emotional, so-called vagotonic individual. The high carbohydrate, low vitamin diet as emphasized by Dr. Seale Harris predisposes to infections of the gastro-intestinal tract and probably plays a part in the etiology of peptic ulcer.

SYMPTOMATOLOGY AND DIAGNOSIS

Peptic ulcer may first manifest itself by a severe hemorrhage or perforation. More frequently, however, the patient gives a long history of digestive disturbances, such as, burning, bloating, gaseous eructations, flatulence, full feeling in the pit of the stomach, etc., that he has experienced at intervals over a period of years. The majority of ulcer patients certainly suffer from epigastric pain and the character of this pain and its relation to the intake of food is of considerable diagnostic importance. In gastric ulcer the pain usually comes on shortly after a meal, gradually subsides and is reproduced by taking food again. The patient with gastric ulcer dreads eat-

ing and usually starves himself because of this dread. In duodenal ulcer the pain, as a rule, does not occur until two to four hours after a meal or in the night, the so-called hunger pain. This pain, if the ulcer is uncomplicated is invariably relieved by the ingestion of food, a fact soon learned by the patient.

Nausea and vomiting may be present in either gastric or duodenal ulcer, but are characteristic of neither.

Hematemesis and melena are strongly suggestive of peptic ulcer, but may occur in carcinoma, in esophageal varix, in cirrhosis of the liver, in cholecystitis, in appendicitis, and in splenic anemia.

No diagnosis of gastric and duodenal ulcer can be made except upon the fullest evidence, a complete history and physical examination, fluoroscopy, gastric analysis, and search for occult blood in the stools. Symptoms closely resembling ulcer may be experienced in many other conditions as for example, cholecystitis, appendicitis, tabes dorsalis, intra-abdominal adhesions, epigastric hernia, etc. The history is of much more value in the diagnosis of duodenal than gastric ulcer. The physical examination is of more value in ruling out conditions that simulate ulcer. Roentgenologic studies are of the utmost importance in confirming the diagnosis, but should not be relied on to the exclusion of the history and physical examination.

THERAPY

The treatment of peptic ulcer for convenience of discussion may be divided into (1) surgical and (2) medical. In what cases is surgical management demanded or indicated? Surgical management is demanded in perforation and let me admonish you to make a hasty diagnosis and operate in the first six hours. Surgical management is demanded in cases in which massive and repeated hemorrhages have occurred, in cases of organic stenosis, in cases complicated by deforming perigastric and periduodenal adhesions, and in cases in which a well-planned dietary has failed to relieve symptoms. Surgical management must be considered in all large gastric peptic ulcers because of the undoubted relationship between gastric peptic ulcer and gastric cancer. Practically all ulcers of the

*Read before the Association in annual session, Mobile, April 19, 1932.

greater curvature of the stomach will be found to be malignant. Cancer of the stomach is common; cancer of the duodenum is almost unknown.

Time will not permit a discussion of the details of the medical management; some of the general principles, however, will be given. It is needless to say that all intra-abdominal, as well as extra-abdominal, foci of infection should be removed. Alcohol, tobacco, and strong coffee or tea should be forbidden.

In planning the dietary, three fundamental features should be borne in mind: (1) The foods should be mechanically non-irritating. (2) It should be so chosen and administered as not to increase the hydrochloric acid content of the gastric juice and not to favor hypersecretion. (3) The food given should be rich in vitamins and of a caloric value sufficient to maintain a normal state of nutrition.

The Sippy diet is an excellent one; it works; but as Alvarez has said, "it is too elaborate for the general practitioner and his poorer and less educated patient". The majority of my patients are people who have to work and are financially unable to secure hospital treatment. Under these circumstances, it is obvious that attention should be devoted to the working out of the simplest form of an ambulant treatment. A patient who has to work must have three good meals a day. These meals should be chosen from a smooth diet list and supply sufficient calories to meet his requirements. The essential element in the treatment is the food between meals. Have your patient carry an egg-milk mixture with him to work and take a glass at intervals of about two hours. In some cases it is necessary for him to take food at closer intervals. Feed your patient before he has pain. In practically all uncomplicated ulcer cases the patient gets immediate relief. It is important to insist that your patient keep up this regimen for a long period of time.

There is some diversity of opinion concerning the use of alkalis. The Sippy treatment calls for large quantities. Alvarez has practically discontinued their use. The majority of my patients do well on diet alone.

Dr. George P. Pitkin, in the *American Journal of Surgery*, June 1931, reported

excellent results in a series of 127 cases of peptic ulcer treated by a preparation given intravenously. The preparation used is a combination of foreign proteins derived from non-pathogenic schizomycetes reinforced by lipoids and animal fats, with emetine. The author believes that a large percentage of peptic ulcers can be healed in from six to ten weeks by this agent given intravenously; that in a short time symptoms will disappear and the patient can go on a full unrestricted diet, even including alcoholic beverages, with freedom from epigastric distress. I have never had any experience with this method of treatment, but it seems worthy of trial in cases that have found no relief from medication or diet, and, at the same time, fear the results of surgical intervention.

TREATMENT OF HEMORRHAGE

Hemorrhage demands absolute rest in bed, complete starvation, and sufficient morphine to quiet peristalsis and allay anxiety. Horse serum or whole blood intramuscularly increases the coagulability of the blood and lessens bleeding. Unless the hemorrhage is severe, these measures, as a rule, suffice, when supplemented by the administration of water and glucose by rectum. In the more severe cases blood transfusion is a valuable procedure. Stimulants or anything to raise the blood pressure should not be used. As a rule, on the fifth or sixth day, you can begin the administration of food.

CONCLUSION

In conclusion I would like to emphasize the importance of giving your patient food between meals. Alvarez has said, "this, unaided, will bring comfort to many patients with uncomplicated ulcer".

DISCUSSION

Dr. G. C. Kilpatrick (Mobile): Observers generally admit that there must be a predisposing cause in the development of peptic ulcer, and many prominent ones proceed to account for it in various ways; the fact remains, that its etiology and pathogenesis are unknown.

It is now commonly accepted that the ulcer patient represents a vagotonic type of individual whose characteristic is the possession of an emotional, worrying, high-strung nature; but typical ulcers are seen increasingly in children of a very tender age. About one in every five that develops

the disease, is under 20 years; and something over 60% are under the age of 30. Not over 10% of those that complain of gastric symptoms have peptic ulcer.

Peptic ulcer in the average ulcer bearing person is non-healing; but symptomatic cures in uncomplicated cases are accomplished with utmost ease and frequently without the aid of diet or medicine, when the patient has a pleasant change in his environment or enjoys a happy state of mind with regard to his physician, or any other cause.

Recurrence of activity of symptoms in a "healed peptic ulcer", regardless of the treatment employed or methods used for the relief of symptoms, is practically certain. And herein lies, as Judd suggests, that agent the discovery of which will yield valuable information regarding its etiology and pathogenesis.

Dr. G. O. Segrest (Mobile): The treatment of peptic ulcer has been very conveniently divided into surgical and medical. Certain cases demand surgical interference. If there is no definite surgical indication, I believe all patients should have the benefit of medical treatment. In reviewing statistics on the subject it would appear that surgical treatment of peptic ulcer is a little more satisfactory than medical treatment, but the surgical failures are worse than the medical failures; a fifty-fifty break in the handling of these cases is, therefore, the approximate result. Of course I refer to uncomplicated peptic ulcer and those cases in which surgery is imperative.

The two surgical procedures which have been most largely used are gastroenterostomy and sub-total resection of the stomach. Sub-gastroenterostomy has been used to some extent and promises to be in time a very satisfactory mode of procedure. There is one thing, however, that comes into consideration in a sub-total gastrectomy that should be mentioned, and that is a person who has had a sub-total gastrectomy sometimes develops an anemia simulating pernicious anemia. I have had two patients who have had a sub-total gastrectomy, both of whom have developed a type of anemia. However, neither one has had since operation any symptoms simulating gastric ulcer. Therefore, if it weren't for the fact that they very often develop anemia, the procedure would be ideal.

There are other factors that come into play in connection with peptic ulcer, as Dr. Carter has said in his paper and as has been re-emphasized by Dr. Kilpatrick. The constitutional make-up of the individual is certainly one of the things that predispose to the development of gastric ulcer.

In discussing the medical treatment of peptic ulcer, Dr. Carter referred to the Sippy method. I think that this is one of the best treatments available. Even men who do not follow it in its entirety include many of its principles in their treatment. Recently there has developed one thing that is markedly different from what Sippy taught; that is, that alkalies are not essential. It has been proved recently that a patient with a

complicating nephritis is made worse by alkalies; that uremic coma can be produced in such a patient by alkalies recommended in the Sippy treatment; and that the patient will, after the discontinuation of the alkalies, come out of his coma and be apparently no worse than he was. If alkalies are resumed, the nephritic condition will again become worse.

There are certain handicaps to the Sippy treatment. I believe that uncomplicated ulcers will get along fairly well, and probably as well, on frequent feedings of some bland, non-irritating diet, followed by alkalies, or without alkalies. If kept on this routine the ulcer will get well; and if they stay on this routine, it will probably stay well.

Dr. Fred Wilkerson (Montgomery): I have listened to a very excellent paper and splendid discussion. There are just one or two points I want to make, particularly in regard to the value of the ambulatory treatment in these uncomplicated cases of ulcer.

In the first place, it is almost axiomatic that if there is an uncomplicated ulcer the patient will experience symptomatic relief within a week or ten days after beginning treatment. The Sippy treatment is perhaps the best treatment that has been devised, but the objection to it is that it is too complicated for the man in general practice to carry out. The associates of Dr. Sippy say that nowhere in the world is this treatment carried out properly except in the hospital where Dr. Sippy originated it.

It is unquestionably a fact that the majority of patients with peptic ulcer are unable to have a long period of hospitalization and I can assure you that you will get excellent results with these cases if you will put them on a simple, bland, mechanically non-irritating diet, as has already been said, with frequent feeding between meals. The latter, to my mind, is the most important element of treatment. Most patients will do just as well as they do on the Sippy treatment. The mistake that is most often made is the failure to insist on the frequent feedings. Time and again I see patients who have been on a bland diet, but they have not been taking food between meals. The interval between feedings should be two or three hours, depending on the case.

I think it is a good thing to give alkali until the patient is symptom free, but after he is symptom free I do not think he needs it. It is, however, of great importance to keep him on a bland diet with frequent feedings for a long time—at least two or three years.

The nervous factors mentioned in the paper and in the discussion are perfectly true. That explains why a man having severe symptoms from a peptic ulcer at home gets immediate relief when he goes to the seashore. It is the freedom from strain and fatigue. One important thing is to give the business man rest in the middle of the day. If you put the patient on a smooth, non-irritating diet with frequent feedings, make him rest in the middle of the day and keep him on that treatment long enough you will get excellent results in the majority of uncomplicated cases.

BRILL'S DISEASE*

SPORADIC TYPHUS

C. P. HAYES, M. D.
Elba

Dr. Nathan E. Brill of New York called attention, in 1910, to a typhus-like disease occurring endemically in that city. Because of its generally milder course and its occurrence under circumstances different from those seen in typhus, he hesitated to identify it as such. He believed that he was dealing with a new clinical entity, an infectious disease of unknown etiology. Cases of this type have since been known in the United States as Brill's disease.

In 1912, Anderson and Goldberger, who had previously reported on the experimental transmission of Mexican typhus (*tabardillo*) to monkeys, were successful in inoculating a rhesus monkey with blood from a case of Brill's disease. They found that, as in *tabardillo*, one infection rendered monkeys immune to subsequent inoculations of the same passage virus. Monkeys previously infected with Mexican typhus were found to be immune to inoculation with Brill's, while those previously infected with Brill's were immune to Mexican typhus. From these observations, they concluded that Brill's disease was, in fact, identical with typhus fever and this conclusion seems to have been quite promptly accepted by the medical profession in general.

During the year or so following, due to the interest stimulated by these investigations, a number of reports of the occurrence of cases similar to those described by Brill appeared in American medical literature. In addition to these, and since that time, cases of clinical typhus have continued to be reported each year to the United States Public Health Service from various parts of the United States, but particularly from the Atlantic seaboard and from states along the Mexican border.

A certain portion of these have been imported or traceable to infection recently imported from foreign sources. Such cases have presented the epidemiologic picture usually associated with typhus as known in Europe. For instance, on the fairly numerous occasions in the last ten years when

typhus has been introduced from Mexico, the disease has been virulent, the mortality high, and the cases have been in persons obviously lousy or those in contact with lousy persons.

On the other hand, there have been a large number of sporadic cases of mild typhus which could not be traced to recent importation and occurring under circumstances which strongly suggested local origin of the infection. In regard to this so-called endemic or sporadic typhus, Brill originally noted that the epidemiology presented points of difference from the epidemiology generally assigned to typhus. He pointed out that the cases occurred sporadically, without traceable connections with each other; that they seldom, if ever, gave rise to new cases among those in contact with the sick person; that no localized outbreaks occurred; and finally, that their seasonal distribution differed from that of typhus. In 1922, while detailed to the State Board of Health of Alabama as Acting State Epidemiologist, Dr. K. F. Maxcy of the United States Public Health Service had occasion to observe a number of cases which were identified clinically as the endemic form of typhus described by Brill and which gave a positive Weil-Felix reaction. Maxcy and Havens (the latter of the Alabama State Department of Public Health) undertook an epidemiologic survey with the result that it was discovered that sporadic typhus was present not only in Alabama, but in Georgia, North and South Carolina, and Florida in sufficient numbers to make it worth our while to become familiar with the diagnosis and recognition of the disease. The first report of Brill's disease in this section of the country was that of Paullin of Atlanta in 1913 in which he described the clinical course of six cases seen by him in that city. In 1914 Newell and Allen reported four cases in Charlotte, N. C. In a later report, Allen in 1923 had contact with many other cases in the series. Smith of the Charleston, South Carolina, Board of Health, reported some fifteen cases occurring there from 1922 to 1925. During the same time, cases were reported from a number of towns in Georgia and Alabama. During 1926 there were reported to the Alabama State Department of Public Health forty-eight

*Read before the Association in annual session, Mobile, April 21, 1932.

cases, in 1927 sixty-nine, in 1928 fifty-nine, in 1929 seventy-two, in 1930 sixty-seven, and in 1931 eighty. Out of this number forty-four were reported from Coffee County. The number would have been greater but for the lateness of appearance of a positive Weil-Felix reaction in several cases.

ETIOLOGY

The question arises, What is the possible carrier of endemic typhus? The incidence of endemic typhus fever in the United States, especially in the cities and towns of the Southeastern States, has been brought to general attention in the past few years largely by the work of Maxcy. Whether endemic typhus in the United State is of European origin or represents an importation of Mexican tabardillo, or whether it is indigenous to the United States is a matter of conjecture. Epidemic typhus has its greatest prevalence in winter; it is associated with crowding; it is most prevalent in the lower strata of society; multiple cases in households, jails, and hospitals are common; and it has been shown repeatedly to be associated with lousiness. In direct contrast to epidemic typhus, the endemic typhus of the United States has its greatest prevalence in the summer and fall; it is not associated with crowding; there is no predilection for the lower strata of society; there is no evidence of spread from man to man; and a history of louse infestation is noticeably rare. The epidemiologic manifestations of epidemic typhus are explained by taking into account the habits of the known vector, the body louse, while the epidemiology of endemic typhus suggests some ectoparasite of the rat. Thus, Maxcy noted that persons employed in food-handling establishments particularly were exposed to an increased risk of infection; Rumreich noted that 75% of the endemic typhus cases studied by him in 1930 were associated with rat infestation. Endemic typhus is more closely associated with the place of employment than with the domicile. To be in agreement with the epidemiologic evidence the vector of endemic typhus must be a blood-sucking parasite which will feed both upon the rat and upon man. Evidence of the importance of such a parasite would be strengthened by the recovery of the virus

of endemic typhus from such parasites taken from foci where known cases of typhus have occurred recently.

Early in this year the recovery of a typhus-like virus from fleas taken from wild rats caught at typhus foci in Baltimore was reported. This was later confirmed by recovery of a similar virus from fleas taken at a typhus focus in Savannah, and each of these strains of virus was shown to be the virus of endemic typhus.

Maxcy has been able to transmit clinical endemic typhus from rats to fleas, and from fleas to guinea pigs.

SYMPTOMS

The period of incubation is not known, but possibly could be given if the cause could be definitely determined. The invasion of the disease is sudden and marked by chilliness or a chill, pain in the head, back and limbs, muscular soreness, prostration and fever. The patient is restless and distressed, the expression is dull, the face is dusky, the conjunctivae are injected, the skin is pungently hot, and the tongue is furred. Vomiting may occur, but as a rule the stomach is retentive. The bowels are usually constipated. Insomnia is frequently a troublesome feature and even at this time there may be some delirium, especially at night. As the disease progresses a slight cough with thin mucopurulent expectoration not infrequently develops. The temperature rises rapidly usually, attaining its maximum, 103 to 105 F., by the third or fourth day. It remains high with slight morning remissions until about the end of the second week, when it falls by crisis or rapid lysis, reaching the normal in two or three days. Occasionally there is a pseudo-crisis about the ninth day. The pulse and respiration are accelerated, usually in accordance with the degree of pyrexia. The spleen is sometimes palpable. The urine presents the usual febrile characteristic and not infrequently contains albumin.

The examination of the blood shows, in a majority of cases, a slight or moderate leucocytosis of the polymorphonuclear type. The blood serum causes agglutination of certain members of the protein group (Weil-Felix reaction). The Weil-Felix reaction cannot be obtained early in the disease. Usually it appears from the

seventh to the tenth day and never before the appearance of the rash. The eruption of Brill's disease consists of distinct maculae which appear as an ill-defined mottling of the surface. The characteristic maculae appear usually on the fourth or fifth day, but they may come out as early as the third or as late as the seventh day. They are fairly abundant, as a rule, and begin on the anterior surface of the forearms, arms, chest, and abdomen, spreading over the entire body in a short time, but are not commonly seen on the face or palms. They are irregular in outline, very slightly raised, of a rosy-red or purplish hue, and at first disappear when the finger is pressed upon them. In the course of a day or two many of the spots may become petechial, no longer fading under pressure. The eruption does not appear in successive crops, as in typhoid fever, but is complete within forty-eight hours. When purely erythematous the maculae disappear within a few days, but when petechial may persist until after the crisis. Generally speaking, the severity of the attack is directly proportionate to the number and lividity of the spots. Occasionally the eruption is absent. Especially is this so in children.

At the height of the eruption, the temperature will drop two or more degrees, but as the eruption begins to fade there is a second rise in temperature, usually not so high. Nor are the symptoms so much intensified as in the first period. The temperature now begins to decline, and is gone by the fourteenth day. The patient can be assured after the diagnosis of Brill's has been established that the fever will last fourteen days.

DIAGNOSIS

The differential diagnosis is between dengue, typhoid fever and malaria. Dengue usually affects whole families and is in epidemic form. It is rare to see more than one case of Brill's disease in a family, at the same time. I have treated two cases of Brill's in the same family, a period of three or four months intervening. In typhoid fever there are prodromal symptoms as a rule, the onset is usually insidious, the temperature curve rises and falls gradually, the pulse is less rapid than in Brill's, and the eruption appears later, coming in successive crops and rarely be-

coming petechial. The abdominal symptoms are usually marked and the blood gives a positive Widal reaction. In malaria there is absence of the severe headache and general aching seen in Brill's, the course is more irregular, and there is no rash.

PROGNOSIS

The death rate of Brill's disease is less than two per cent. In old people and individuals exhausted by privation, fatigue, or pre-existing disease, the outlook in sporadic typhus is especially grave.

TREATMENT

The treatment of Brill's disease is that of any acute infectious disease. Absolute rest in bed, an abundance of fresh air, and careful nursing are especially important as the process is an exceptionally depressing one. The strength should be maintained by sufficient nourishment of a readily digestible character. Stimulants should be given if needed, and codeine to relieve pain. The temperature is best controlled by hydrotherapy.

DISCUSSION

Dr. W. A. Lewis (Enterprise): You have listened to an excellent paper by Dr. Hayes on the subject of Brill's disease or endemic typhus. It is worthy of your consideration since there are but few references in the literature to the disease. Brill's disease is not anything new. It is a great deal more prevalent and wide-spread than we anticipate.

Some twenty-five or thirty years ago I saw in consultation a patient, a boy about fourteen years of age. On examination, he was found to have a typical eruption. Today we would diagnose the case as Brill's. I told the doctor in charge that perhaps it was a case of typhus fever. He ruled out my tentative diagnosis on the assumption that typhus fever was associated with jails, dungeons and filth. The people of this boy were tidy in their home. I learned the boy made an uneventful recovery in about two weeks.

For a number of years I treated a fever of two weeks' duration, of indeterminate etiology, thinking at the time the fever was due to some form of remittent malaria or paratyphoid fever. I was doubtless seeing and treating Brill's disease all along without making a correct diagnosis.

A few weeks ago the United States Public Health Service issued a bulletin on typhus fever in which was used the term endemic typhus. I believe endemic typhus is a more appropriate name than Brill's disease. The investigators proved conclusively that the rat flea from diseased rats is the common vector of endemic typhus from rat to rat and rat to man.

I believe that further observations and experimentation will also prove conclusively that endemic typhus is a distinct entity. The vector of typhus fever is the louse and epidemic typhus fever occurs in the lower strata of society. Fleas from diseased rats transmit endemic typhus to human beings, and endemic typhus occurs among the upper class of people.

The essayist has given you the symptoms—rapid onset, high temperature, extreme headaches, restlessness and nervousness. In fact, I saw a man once that I had diagnosed as having Brill's. It was in the early fall, cool weather, and he had built a fire; he had a temperature of 105°; he was restless and couldn't stay in bed, wanted to get out of doors. I had to use the needle to quiet him down.

Endemic typhus, if we once see it and observe the symptoms, is easy of diagnosis. We should watch closely for the eruption which is typical. It appears from the fourth to the sixth day on the flexor surface of the arms and forearms and on the chest and abdomen. When these symptoms appear, we can positively assure the patient that they have endemic typhus. We can give them the further assurance that the fever will subside in fourteen days. The blood examination (Weil-Felix) reaction is never positive before about the ninth or tenth or eleventh day.

The prophylaxis is a complete extermination of all rats.

Dr. Henry Green (Dothan): Dr. Hayes has described Brill's disease in a clear cut and forceful manner. I consider the subject well chosen, as I frequently meet doctors from Alabama, Georgia and Florida who have never seen a case.

A patient that has Brill's disease is really sick. It is to be earnestly hoped that a method of early diagnosis will be worked out before long. The eruption is fairly typical but does not come out until the fifth to the ninth day. The Weil-Felix reaction is not positive until the patient is convalescent, or almost so, so this laboratory procedure is only confirmatory.

The etiology, so far as I can judge, is still not entirely clear. As Dr. Hayes points out, the cootie is certainly not the intermediate host as it is in typhus.

Like Dr. Hayes, I have had many cases, most of them in families of the highest standing from a cleanliness and sanitary standpoint. I do not remember to have ever seen a case in a person who could reasonably be suspected of harboring these vermin or being associated with those who do harbor them. Furthermore, except in one instance, I have not seen two cases in a single family. About five years ago a prominent citizen in my town came down with a typical case of Brill's, and about a year later the son developed a case. The father was a horse dealer and the son a college student. On a prominent business street in Dothan four employees of a drug store came down. In the same month, and in a bakery two doors away from the drug store, two cases developed, and in a hardware store about five or six doors away two other cases developed. There were

other cases in the same block. That was in a space of about four months.

Dr. Hayes sums up the treatment very clearly. I have treated my patients symptomatically in addition to the general care of any acute febrile disease.

I am really glad Dr. Hayes has chosen this subject because it is a really important subject in our part of the country.

Dr. Hayes (closing): I want to thank the gentlemen for their kind and considerate discussion. I want to add one point: The ratio of men to women who have the disease is as five to one. This it seems to me bears out the theory that work in food-handling establishments is a predisposing factor.

THE ACUTE ABDOMEN*

AS ENCOUNTERED BY THE COUNTRY
DOCTOR

C. P. GAY, M. D.
Geneva

It is my purpose to deal with this subject in a practical way, calling attention to certain signs, symptoms, differentiations and modes of procedure that are within easy reach of the average country doctor. While I acknowledge that some of the modern appliances, such as the x-ray and microscope, are valuable adjuncts to a correct diagnosis, and in some instances almost indispensable, yet in many cases diagnosis can be arrived at readily if attention is paid the history and symptoms.

Among the acute troubles most commonly met with in the abdomen demanding prompt treatment, and in most instances surgical interference, and which are most likely to be confounded with one another, are appendicitis, salpingitis, cholecystitis, perforating duodenal ulcer, intussusception, renal calculi, pyelitis or pyelonephritis, and strangulated hernia. As appendicitis is by far the most common of these, I shall give first a brief description of it, then mention some of the most common points of differentiation between it and the others mentioned.

DEFINITION

Appendicitis is an acute inflammation of the vermiform appendix of undetermined origin, which may subside spontaneously, though frequently it causes changes in the

*Read before the Association in annual session, Mobile, April 19, 1932.

appendix which predispose to subsequent attacks; or, it may result in perforation or gangrene followed by local or general peritonitis, if the appendix is not removed before such changes have occurred.

CLINICAL MANIFESTATIONS

Acute appendicitis is characterized by cramp-like abdominal pains, localized tenderness, muscular rigidity over the site of the appendix (this is almost pathognomonic), and varying degrees of fever and vomiting. Quoting from Cecil's textbook of medicine," Vital statistics seem to show that appendicitis is on the increase, but this is probably not true. The diagnosis is made more frequently and with greater certainty than before and as the number of cases reported in vital statistics increases, the number of lesions of the liver and peritoneum decreases. Appendicitis is more common among the highly civilized than among primitive people; among dwellers in the city than among those living in the country districts. It seems to increase with the restrictions and restraints of civilized life which affect defecation and the passage of gas. Constipation undoubtedly contributes to the development of the disease. Primitive people rarely ever have appendicitis so long as they live in their original surroundings, but the incidence increases as soon as they change their mode of living; for example, when country people move into the city. It is generally admitted that the disease is rare in the Orient.

"Statistics do not indicate that the well-to-do suffer from appendicitis any more frequently than do the lower classes. Appendicitis is most often seen in patients between ten and thirty years of age; but it may occur at almost any age. Fenger described a case in a seven-weeks old baby, and Dean Lewis drained an appendiceal abscess in a patient over 90 years old. All statistics agree that the disease is more common in men than in women. Of 1577 cases reported by Dean Lewis 949, (60%) occurred in men and 628 (40%) in women.

"Appendicitis has been observed in several members of the same family; this is, however, probably due to exposure to the same conditions of life and a similarity in diet."

HISTORY

Again quoting: "Mestiver in 1759 was probably the first to describe and direct attention to an acute inflammatory lesion of the appendix.

"Parkenson in 1812 found at autopsy a perforation of the appendix of a child that had died after being sick two days. He regarded the perforation as the cause of the peritonitis.

"Louyer-Villermay in 1824 described in detail the morbid anatomy in two cases. In one there was localized inflammation, the appendix was larger and thicker than normal, black and gangrenous and contained pus. The cecum was not affected. In the other the appendix was large and dark in color, the distal portion being gangrenous. He emphasized the fact that inflammatory processes involving the appendix develop and progress rapidly.

"In 1827 Melier described five cases of appendicitis. He laid special stress on the pathogenesis, and suggested the possibility of fecal masses as the causative factor. He also stated that if the disease was regarded as rare it was because autopsies were incomplete and sufficient attention was not directed to the appendix. He described what was probably the first case diagnosed during life, and recognized the possibility of a transformation of the acute into the chronic type.

"These early reports were either overlooked or neglected for a number of years. Dupuytren believed that the inflammatory process developed about the cecum and that it was secondary to mechanical factors. His authority was so great that for years attention was directed to the cecum and adjacent structures in the study of the disease. He introduced the term, perityphlitis. Some years later more complete autopsies and accurate observations demonstrated the role played by the appendix in localized and general peritonitis. The significance of the lesion was first definitely recognized by Reginald Fitz of Boston in 1886. He introduced in medical literature the term, appendicitis".

ETIOLOGY

I have said that appendicitis is of undetermined origin. I believe that this statement is true. Much work has been

done in an effort to prove that the disease is of bacterial origin. Many have charged the colon bacillus as being the offender; others have linked the colon bacillus with other pyogenic organisms found present in the contents of the recently removed inflamed appendix. When it is considered that the colon bacillus is a normal inhabitant of the intestinal tract; that a normal appendix is lined throughout with mucous membrane and possesses *vis a tergo* movements similar to those of the intestinal tract, I can see no more reason why these bacteria should cause inflammation in the appendix than in other portions of the tract. Personally I have seen many cases that contained enteroliths of varying sizes and shapes. One contained several coarse stiff hairs or bristles; in others no foreign substance was in evidence.

In my opinion constipation and errors in diet are the primary causes, and the presence of bacteria is secondary.

SYMPTOMS

Pain is the most prominent and constant symptom coming on suddenly and cramp-like, referred in most instances to the epigastrium with remissions and exacerbations depending on the amount of peristalsis present. It is not infrequently so severe that the patient exhibits symptoms of collapse. The exacerbations serve to differentiate the pain associated with appendicitis from that due to distention of a hollow viscus, such as the gallbladder, or pelvis of the kidney, which soon reaches its maximum and continues with constant severity until it subsides spontaneously or is relieved by morphine.

When there is marked distention of the appendix the pain may be excruciating and the temperature low. The pain usually subsides or is greatly relieved if perforation occurs. Before the true character of appendicitis was recognized, this relief was frequently regarded as evidence of improvement.

Localized Tenderness: Early in the disease a definite localized tenderness develops over the appendix (McBurney's point), at the middle of a line drawn from the navel to the right anterior superior spine. There is definite muscular rigidity in the right lower quadrant, frequently so severe as to

produce a ridge in the abdominal wall. This tenderness and rigidity may develop in other positions depending on the location of the appendix. When the organ is retrocecal, they may be noted posteriorly. The rigidity (muscular defense) is frequently so great that palpation of the right iliac fossa is difficult or impossible. Localized tenderness associated with muscular rigidity is one of the most important signs of appendicitis.

Temperature: Appendicitis rarely begins with a chill. A chill at the beginning or during the course of the disease is suggestive of some complication, such as suppurative thrombosis of the portal vein. The temperature curve is neither typical nor characteristic. It is sometimes difficult to determine the exact variations in temperature, for often we see the patient after fever has developed. However, they are frequently free from fever for several hours. Recently, I saw in consultation a case in which operation was delayed a whole day because there was no fever. Other symptoms, however, were so typical that operation was advised and when done the appendix was found almost ready to perforate. Temperature readings had been taken by mouth. Rectal readings were not resorted to. Had they been, it is probable an elevation would have been noted. In the usual case the temperature is rarely above 103°F; often not over 99.

A high leukocyte count is suggestive, and in some obscure cases is a valuable aid in diagnosis, but in most cases a diagnosis can be made without this aid, if close attention is paid the clinical symptoms.

Gastro-Intestinal Symptoms: Vomiting, associated with the other symptoms mentioned, is strongly suggestive but so inconstant that too much importance should not be attached to its presence. Usually there is constipation though not always. Quoting again: "Among the 50 cases carefully observed by Treves, constipation was noted in 26, diarrhea in 13, normal movements in 8, and constipation alternating with diarrhea in one".

Localized tenderness and rigidity are the most important diagnostic sign. If the patient is seen late, after abscess formation, a mass can be palpated in the right iliac region.

TREATMENT

It is my opinion, based on an experience of 35 years, that treatment is 100% surgical. I will not tax your patience to describe technique further than to say that with plenty of hot water and strict asepsis there is no reason why these cases cannot be operated on in the home just as successfully, as in the best hospitals; and that the end results will be just as good. In some cases the results will be better especially if seen and diagnosed late, as the more the patient is handled or allowed to exert himself, the more liable he is to have a perforation or ruptured abscess, resulting in localized if not general peritonitis. I am a strong believer in early operation. I believe if all cases were operated on in the first 24 hours, recovery would be practically 100%. I do not believe we should delay operation even if we cannot make a positive diagnosis; with modern bloodless aseptic surgery and careful handling of the viscera, the risk to the patient is reduced to a minimum. Delay is dangerous, especially in children, where the omentum is imperfectly developed, thus lessening the chances of nature walling off the infection and preventing general peritonitis in case of perforation.

Let me insist, if you cannot make a diagnosis at once that warrants operation, that you do not give purgatives, thereby increasing peristalsis and danger of perforation and the sequelae that follow. It is better by far to give a hypodermic of morphine and see the patient again in a few hours. It may be possible then to arrive at a diagnosis.

Occasionally I see a patient who will not submit to an operation. Instead, he insists on calling Doctor A., who receives all the glory if things move smoothly; I lose the family's practice. More often the patient goes to the bad, whereupon Dr. A advises that he was not called soon enough; I still get the blame.

DIFFERENTIAL DIAGNOSIS

Salpingitis on the right side in many ways resembles appendicitis, but the history of venereal disease or a miscarriage or puerperal fever and vaginal discharge should serve to differentiate it from appendicitis. Furthermore, the pain comes on

more gradually, is not so cramp-like, and a mass can usually be felt through the vagina.

Cholecystitis: Cholecystitis begins with pain in the epigastrium radiating to the back and right scapula. There is history of recurrent attacks, some of which may be accompanied by jaundice. There is tenderness in the right hypochondrium. Usually there is rapid recovery from the pain.

Duodenal Ulcer: A history of chronicity with recurrence of acute symptoms is characteristic of duodenal ulcer. History of hunger pains, which come on at night and are relieved by soda or food can usually be elicited. The pain associated with rupture of an ulcer develops suddenly, is excruciating, and is usually accompanied by some degree of shock. Grunting respiration is often noted. The board-like rigidity of the upper part of the abdominal muscles on the right side is very suggestive. The duodenal contents, poured out into the abdomen, gravitate along the outer side of the colon toward the right iliac fossa and give rise to distinct tenderness and rigidity over the appendix. A thing peculiar to this pain is that the patient is with difficulty sufficiently narcotized to relieve it. The previous history aids in diagnosis.

Renal Calculi: In renal calculi, the attacks of pain come on suddenly, are cutting in character, and beginning in the back and radiating downward and forward toward the testicle or ovary as the case may be. Frequently in the male, there is retraction of the cord on the affected side, more or less hematuria soon after the attack, and increased micturition.

Pyelitis and Pyelonephritis: In these conditions, pain comes on gradually as a rule, with extreme tenderness over the region of the affected kidney. There are irregular chills, especially at night and numbering two or more during 24 hours, which serve to differentiate them from malarial chills. Pyuria is best detected under the microscope but can be made out by chemical test.

Strangulated Hernia: This condition would not be mentioned but for the fact that I have knowledge of a case of strangulated hernia which was diagnosed as and treated for biliary colic. A correct diagnosis was not made until nature relieved the

patient by establishing an artificial anus. The pain, vomiting, and presence of a tumor should serve to differentiate strangulated hernia from any of the conditions mentioned.

Intussusception: This condition occurs most frequently in infants and children and can be easily differentiated from the others by the presence of constant muco-bloody stools and a tumor in the lower abdomen, which can usually be made out by rectal examination.

TREATMENT OF OTHER CONDITIONS

Salpingitis: I have already discussed the treatment of appendicitis. Salpingitis can be treated conservatively by the use of hot douches, hot applications over the abdomen, rest in bed and free elimination, with anodynes to relieve the pain. If pyosalpinx develops, surgery must be resorted to either through the vagina or by laparotomy. Early laparotomy is the method of choice.

Cholecystitis: Early drainage of the gallbladder by surgical measures is the treatment of choice, in my opinion. If left alone to palliative measures until a portion of the liver structure or transverse colon is involved, chances of recovery are lessened.

Perforating Ulcer of the Pylorus: The treatment is immediate surgery since delay of a few hours will result in general peritonitis and in many instances death of the patient.

There is no reason why a physician, who does any surgery at all, should not, under strict aseptic precautions, open the abdomen and close the perforation with purse-string suture, even if a second step in the operation should be necessary later to do an anastomosis to relieve the probable pyloric stenosis. Life can best be conserved by operating immediately; not by waiting to carry the patient to a hospital.

Renal Calculi, Pyelitis and Pyelonephritis: These conditions can be treated conservatively for a time through the use of the ordinary urinary antiseptics and anodynes to relieve pain. If patients fail to respond, I think it best to refer them to the urologist.

Strangulated Hernia: If the tumor cannot be reduced readily under general anes-

thesia without considerable trauma, surgery should be resorted to, six hours being the limit to allow the strangulation to exist.

Intussusception: The treatment of intussusception is surgical, no delay or palliative measures being justified. If done immediately, the procedure is as simple as any ordinary laparotomy; if delayed until the parts are highly congested and edematous, or until adhesions have formed, or sloughing has taken place, the operation is difficult and the prognosis bad.

CONCLUSION

Care in taking histories and in making examinations will do much to promote accurate diagnosis and dictate proper treatment.

In the absence of hospital facilities, patients can be operated on successfully in the home. Naturally aseptic measures must be instituted to assure such success.

DISCUSSION

Dr. Merle E. Smith (America): May I call attention to the fact that the lower abdomen presents difficulties in diagnosis, though not as great as those found in the upper abdomen. This is especially true when one realizes that pain is referred to this area from both the chest and the inguinal region, and frequently a pneumonia patient loses his appendix and an appendectomy has at times ended as a herniotomy.

The English appear to be more conservative in their treatment of appendicitis. A number of their surgeons advocate the Ochsner-Sherren treatment in acute appendicitis over 50 hours old. Henderson, in Wheeler and Jack's Handbook of Medicine, states that "most acute appendices will get well if left alone". However, I agree with Dr. Gay that the sooner the offending organ is removed the sooner the patient and doctor will feel better.

Dr. E. V. Caldwell (Huntsville): I would like to say, in discussing the question of intussusception, that I do not believe that any disease demonstrates itself exactly the same way always; I know my experience with intussusception has shown that cases vary in the intensity of the symptoms and the degree of ease with which a doctor can make a diagnosis.

It has been my impression that bloody stools do not always occur in intussusception within a few hours. My experience in my own private practice, outside of those cases that have been referred to me, is that upon which I would have to base an opinion regarding symptomatology. I say this because cases referred to a surgeon are usually those in which a diagnosis has already been made,—certainly a diagnosis of acute abdomen. On the other hand, a private physician having initial care of a patient must trace out the

symptoms and they do vary. The most common history which I encounter in private practice and in those cases of intussusception which I see early in consultation is as follows: A mother will say, "My baby cried for a few minutes and then began to play with its blocks; cried again, stooping and holding its stomach, and then returned to its play".

My experience has seemed to indicate that the prolonged and intense pain doesn't begin until the condition has become fixed. I mean by fixed that adhesions have taken place. If, in watching a baby, you note that he has a few pains, holds his stomach, and then gets down and plays again, it is a good indication of intussusception.

That is a logical thing to happen from the mechanics of the situation. The intussusception takes place; there is peristalsis and the baby hurts; then the peristalsis passes by, and the pain lessens. Bloody stools occur only after sufficient congestion has occurred to produce an agglutination. It isn't an inflammatory exudate; it is a mechanical obstruction to the blood supply. When that change takes place, mucus and bloody stools appear. The stools do not occur until this structural change has taken place in the involved loop. That varies because the mechanical constriction may be complete from the start, or may slowly become complete. The hemorrhagic condition from the loop varies according to the completeness of the obstruction to the circulation. That is the only logical conclusion you can come to from the mechanics of the situation.

When a man goes to see a case of intussusception, he is going to see something (in the parlance of the day), and he should be very careful about it. The diagnosis cannot always be made immediately.

I remember the last case I was called to see. I was called in the afternoon and I didn't operate until the next morning. I thought I had a case of intussusception. The father of the child had been my next door neighbor and friend for years. I didn't want to operate unless I had to. I watched the child. There was no bloody stool but there was an eighteen-inch intussusception from Meckel's diverticulum, dragging the mass back with it.

I want to say one thing about perforation of the duodenum, particularly pin-point perforation of the duodenum on an empty stomach. I have had two of these lately, with physicians in consultation to corroborate my diagnosis. Sometimes they get well without any surgery at all. I have had four to get well lately who refused operation.

Dr. Gay (closing): I have but little to say in conclusion. I want to thank the gentlemen for their interesting discussion. I was a little afraid I had covered the subject so thoroughly nobody would want to discuss it.

I want to mention this fact: I graduated in medicine in 1897. At that time the recognition of appendicitis was practically new and the advice given to us from college was: If a man has the stomach-ache and hasn't any fever he has colic; if he has fever, he has appendicitis. Through

sad experience I have learned that that is not true. If a man has the stomach-ache and has a rigid abdomen on the right side, you may rest assured he has appendicitis whether he has a fever or not.

I want to stress another point. A positive diagnosis should not be waited for before an operation is done if you are in doubt. I have operated on them myself when I was in doubt, and on operation found a thorough case of appendicitis. I don't operate on them as they do in hospitals and don't have the large experience that men operating in hospitals have, but I do a great deal of my operating with meager facilities. These cases can be operated on in the home; these patients should not be cheated out of their best chance for life because a hospital is not available. Have plenty of hot water on hand and don't handle the intestines too roughly. I have been operating on patients and following this procedure for a good long time. I have operated on these patients in their homes, and have given them a chance they would not have had otherwise. If you take out a healthy appendix, you haven't hurt the fellow. It is better by far to do that than to take the risk by failing to operate on an acute appendix.

RECENT ADVANCES IN THE PROPHYLAXIS OF DIPHTHERIA*

TOXOID

A. H. GRAHAM, M. B., M. D. D. P. H.
Opelika

Every field of medical research has contributed its quota to the history of medicine in its conquest of science over disease. The recognition of the bacterial causation of many maladies has been particularly effective in promoting the attack.

The conquest of diphtheria is an accomplishment of a period most of which is within the recollection of many physicians still living. The initial description of the malady by Bretonneau of Tours in 1821, followed by the discovery of the *Bacillus diphtheriae* in 1883 by Klebs, is the essential nucleus from which the present developments have arisen.

Roux and Yersin in 1889 demonstrated that the *Bacillus diphtheriae* produced an exotoxin and hence made possible the production of antitoxin by Behring in 1890.

As early as 1895 Park introduced antitoxin in New York City for distribution to indigent persons. Experience there as elsewhere, demonstrated the specificity of the antitoxin as a cure, with a resultant

*Read by title at the annual session of the Association, Mobile, April 19, 1932.

marked decrease in mortality from the disease. Since its introduction concentration and refinement of the antitoxin has reduced the serum reactions incident to its administration.

The Schick test has been extensively used for many years to determine the susceptibility of an individual to the disease. The age group 0-10 years is the most susceptible and hence it is in this direction that we must direct our prophylactic campaign.

Both diphtheria toxin and antitoxin have been accurately measured and standardized in units. A combination of the two, known as toxin-antitoxin—with a slight excess of the toxin—has been used for a good many years as an immunizing agent. The dosage and interval now commonly used is three doses of one cc. one week apart. The disadvantage of the mixture is its horse serum content and its subsequent sensitization of the individual. There are now preparations on the market produced from sheep antitoxin to offset this disadvantage.

Ramon in 1922 and 1923 developed a preparation known as anatoxin in France, but commonly called toxoid in this country to avoid confusion with the word antitoxin. This preparation is made by using the broth culture of diphtheria organisms, filtered to obtain the toxin and the filtrate treated with formalin, etc., to detoxify it. This treatment destroys the toxic proper-

ties but does not affect its antigenic or immunizing properties. In addition to the absence of horse serum in this preparation, various observers, on a small series of comparative experiments, state that its immunizing value is greater than toxin-antitoxin.

Toxoid has been used rather extensively in the United States and Canada since 1925. The results as reported are very encouraging with 92 to 98 per cent immunizations. The same standardization, however, which applies to diphtheria toxin, diphtheria antitoxin, and the mixture, toxin-antitoxin, cannot be said to accurately apply to toxoid. We are in the process of determining the basic standards, its dosage, intervals and degree of efficiency in immunization. The Federal Government has laid down minimum requirements but some observers feel that they are much too low.

The following study was made to assist, if possible, in determining a correct standard. Our work was carried on, almost wholly, in the white school age group of from 6 to 20 years of age. An initial Schick test, using a proven batch of material, was made and only our true and frank positive reactors selected.

A retest of the individuals receiving toxoid was made at periods varying from nine weeks to nine months.

Both Schick test material and toxoid were prepared and furnished us by Dr. Leon C. Havens of the Alabama State Department of Public Health.

GROUP I

Diphtheria Toxoid

3 doses of 1 cc. at weekly intervals.

Retested in 6-9 months.

Age by Years	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Per Cent
Total	5	9	8	12	16	9	9	2	0	1	0	0	0	0	0	71	100.0
Schick Neg.	5	9	7	12	14	9	9	1	0	0	0	0	0	0	0	66	93.0
Schick Pos.	0	0	1	0	2	0	0	1	0	1	0	0	0	0	0	5	7.0

GROUP II

Diphtheria Toxoid

2 doses of 1 cc. with interval of 2 weeks.

Retested in 6-9 months.

Age by Years	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Per Cent
Total	0	9	9	9	6	6	12	1	4	3	0	2	0	0	0	61	100.0
Schick Neg.	0	8	9	9	5	6	12	1	3	3	0	2	0	0	0	58	95.1
Schick Pos.	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	3	4.9

GROUP III

Remainder of Groups I and II who did not complete the series, receiving only one 1 cc. dose of diphtheria toxoid. Retested in 6-9 mos.

Total	17	100.0%
Schick Neg.	13	76.5%
Schick Pos.	4	23.5%

GROUP IV

Special Precipitated Diphtheria Toxoid
1 dose of 1 cc. Retested in 9-12 weeks.

Age by Years	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Per Cent
Total	50	13	9	7	2	3	3	3	3	0	0	1	0	1	4	99	100.0
Schick Neg.	46	12	8	7	2	3	3	3	3	0	0	1	0	1	4	93	93.9
Schick Pos.	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	6	6.1

The above groups, I, II, III, IV, were larger during the course of investigation, due to many factors such as absence from school, failure to cooperate, moved from county, etc.; the remaining numbers are too small to be of any great statistical significance. However, for practical purposes, knowing that our work was accurate, the project will indicate the trend of work done by other observers and thus bear out the efficiency of toxoid in immunization against diphtheria.

Most manufacturers are providing the two 1 cc.-dose packages of toxoid and recommending intervals of three to four weeks. Assuming that proper standardization will occur in the very near future, I believe that a two-dose series with the above intervals will immunize between 92 and 100 per cent of susceptible individuals. Other observers have verified the fact that a fairly long interval between two doses, say one month, will give a higher percentage of protection than doses given closer together.

The most valuable, practical findings in our series are:

- 1. With one dose of ordinary toxoid, even in such a small group, 76.5 per cent are immunized.
- 2. With one dose (1 cc.) of special precipitated toxoid, 93.9 per cent become Schick negative.

We observed quite severe reactions in one adult teacher and one older school child. The reaction was marked by red-

ness and swelling at the site of injection, with chills and high fever. Ordinary toxoid was used in these cases. In the remainder of the group no reactions, worthy of note, occurred.

Most workers agree that a preliminary Schick test is not essential in younger children up to eight years of age. However, they recommend a Schick test in older children and adults, because of pseudo- or false reactors usually found in persons above nine years of age. The sensitization to the diphtheria protein is the underlying factor in severe reactions following the administration of toxoid.

Most biological firms are now including a vial of diluted toxoid (1-20) for the reaction test or skin test—using 1/10 cc. injected intracutaneously. If an area of redness, exceeding one-half inch in diameter, develops within three days, the individual is sensitive to the protein in the toxoid mixture. Such individuals should be desensitized using smaller doses at intervals of one week. The suggestion is made by some workers that toxoid be used for younger children and toxin-antitoxin (sheep preparation) for older children and adults. When using toxin-antitoxin in this age group some observers recommend that the original or first dose be given subcutaneously, instead of intramuscularly, as a reaction test. If no reaction occurs, the person is considered immune and the series need not be completed. If a reaction does occur the remaining two doses should be given intramuscularly.

From an administrative standpoint, many workers have wondered what degree of protection is given a person, who received only one or two doses of a three-dose series of typhoid vaccine, toxin-antitoxin or toxoid. It would appear that with ordinary toxoid considerable protection is given in a reasonably high percentage of individuals (76.5 per cent). In our experimental series one dose of special precipitated toxoid gave the surprisingly high percentage protection of 93.9. This special toxoid is still in an experimental stage and is not available for distribution. It was not our original intention to demonstrate that one injection of toxoid would immunize so high a percentage of susceptible persons as to make it applicable for general use. Some time in the future, however, may we hope that standardization of toxoid may result in such a simplified and uniformly efficient protection!

The weakest plank in our health program has been the meager protection afforded our infant and preschool children against disease. There are many factors which have been responsible for the slow progress in this direction. To make any appreciable headway in the reduction of diphtheria incidence and mortality it is necessary that a minimum of thirty per cent of the age group 6 months to 6 years be given full protection. We must, therefore, as physicians, direct our thought and effort to the completion of the task of controlling diphtheria. With unity of purpose, and with an agent as efficient as toxoid, the dreaded disease should be controlled in a period not far distant—when those of you who saw the initiation of the battle shall see also the victory.

SUMMARY AND RECOMMENDATIONS

1. Toxoid, as prepared by the Alabama State Department of Public Health, given in one cc. doses at varying intervals for either two or three doses will immunize more than ninety per cent of susceptible persons.
2. For administrative purposes it is recommended by the Department of Public Health that toxoid be given in one cc. doses for three doses at intervals of one week. This immunizes

ninety-three per cent of susceptible persons.

3. For physicians in private practice the use of two doses of one cc. each at intervals of three to four weeks will immunize ninety-five per cent of susceptible persons.
4. Immunity is produced in nine weeks.

The Chancre—It is a generally accepted theory that the local tissue reaction following the inoculation of the *Treponema pallidum* into the body may not reach the point of clinical recognition. Therefore, syphilis may develop without the appearance of the chancre. Usually, however, it is the first manifestation of the disease, and develops invariably at the point of entry of the organism into the body. It makes its appearance most often between the second and fourth week, but may develop as early as the tenth day or as late as the fortieth day after exposure. It may vary in appearance from a very small and insignificant lesion to a large and angry ulcer. Therefore, as a means of diagnosis, too much reliance should never be placed upon the morphology of the lesion. Every genital lesion, regardless of its appearance, should be considered as syphilitic until proven otherwise. Chancres which assume the typical Hunterian form can hardly be mistaken, but these constitute a small percentage of the primary lesions.

The following are the principal physical characteristics of the primary lesion of syphilis:

1. Painless, usually singular, and with an indurated base and clean cut borders.
2. Scanty exudate which is serous rather than purulent in character.
3. Long incubation period (ten to forty days).
4. Slow to heal without treatment (three to eight weeks).
5. Bilateral enlargement of the lymph glands which are painless and do not suppurate.
6. A scar often remains after the lesion has healed.

The above physical characteristics of the chancre when considered independently have little weight, but become significant only when appearing in combination. For example, the single chancre is typical, but exceptions are not infrequent. As high as twenty lesions have been reported on a single person, and from two to four are not at all uncommon.—*From the Division of Venereal Disease Control, State Board of Health, Montgomery, Alabama.*

NEXT MEETING
MONTGOMERY
APRIL 18-21, 1933

THE JOURNAL
OF THE
Medical Association of the State of Alabama

Editor-In-Chief

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Office of Publication:

519 Dexter Avenue.....Montgomery, Ala

Subscription Price.....\$3.00 Per Year

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent.

September 1932

POTENTIALITIES OF THE MODERN TREATMENT OF TUBERCULOSIS

In 1900 the death rate from pulmonary tuberculosis in the United States was 182 per 100,000. By 1929, the death rate had fallen to 68 per cent per 100,000 and the "Captain of the Men of Death" was demoted to seventh place among the agencies of death. Undoubtedly, prevention of morbidity, consequent upon the improved modes of living, the active, wide-spread propaganda which diffused knowledge concerning the danger of contact with consumptives, and the institutional and private isolation of expectorating cases with proper disposal of sputum, largely accounted for this fall in the death rate. While the causes of the decline in tuberculosis mortality are not fully agreed upon, preventive methods may rightfully be viewed as an important factor in the reduction of mortality.

After due acknowledgement has been made of the early prescience of Bodington and the priority and important influence of Brehmer, Detweiler must be acclaimed as the man who introduced the ideas of rest in the open air, anywhere, as opposed to the "immune regions" of Brehmer, with a nourishing diet rather than hyperalimentation. However, only time and cumulative experience, critically studied and corrected by experimentation, coupled with a fuller

knowledge of the pathogenesis of the disease and of the processes of reparation, could reveal that lung-rest was the essential and fresh air and food important accessories in the curative program. From the same teacher we learned the necessary duration of rest. Where tuberculosis involvement of the lung is extensive, six months or more of rest may suffice to render the patient atoxic and to effect some resorption of exudative infiltrations; but to secure compact, fibrotic encapsulation of areas of caseation, which rarely are completely resorbed, requires one or more years of continuous bed-rest, for even intensive bed-rest only partially immobilizes the lung. To confine to bed, for months or years, a patient who feels well and perhaps is well clinically but has an anatomical lesion which must be securely walled off, is a problem of the first magnitude. One of the most difficult factors is the cost of cure and the cost of care of dependents while curing. Collapse therapy has measurably aided here. The fact of a shorter and surer method of cure, which at the same time permits a return to gainful employment even before the cure is completed, is a revolutionary event in the control of the most destructive disease of early and middle life. For collapse therapy, when successfully mediated by pneumothorax, phrenico-exaesis and thoracoplasty, effects so much prompter and more competent fibrotic encapsulation, and maintains lung rest so adequately that the patient may return to remunerative activity in many cases long before the cure is completed without danger to himself or menace to others. Riviere has said, "No more hopeful ray of sunshine has ever come to illumine the dark kingdom of disease than that introduced into the path of the consumptive through the discovery of artificial pneumothorax."

Using the modified Framingham formula of 5 active cases for every death, there are in Alabama, 11,240 cases of active pulmonary tuberculosis. In 1931 Alabama led the United States in cases reported, the number being 5,066. Of these, 999 were reported by the two State chest clinics. As a result of the work of these clinics and the stimulation of interest in tuberculosis among the medical profession, a tremendous clientele is being rapidly cre-

ated for those who master the newer concepts of tuberculous pathology and treatment and equip themselves to render medical and surgical aid to the tuberculous. A common and fruitful practice is that of a surgeon and medical man trained in tuberculosis forming a team.

Considerations of humanity and professional obligation and opportunity will compel progressive men to prepare themselves to enter this inviting field of practice, so promising in its returns, so large and increasing in its extent. Nothing but disaster, however, can follow unless those who attempt these medical and surgical measures are properly equipped with knowledge, skill and apparatus.

While pneumothorax and phrenico-exaeresis are not usually formidable surgical procedures, they are not to be regarded lightly. Pneumothorax, the operation that effects the most complete collapse and the one generally employed when possible, carries a mortality of five per cent from its pleural complications alone, not to mention occasional sudden deaths from air embolism and pleural shock. Furthermore, pneumothorax cannot be properly and safely conducted without fluoroscopic observation; nor is its continuance possible in a considerable per cent of cases after it has been instituted. Exaeresis of the phrenic nerve, of course, means permanent paralysis of the hemidiaphragm and is attended by serious disaster and even death at times. Thoracoplasty is a grave operation. Not every case of pulmonary tuberculosis is suitable for surgery. In some, it would be strongly contraindicated, and in none could bed-rest be discarded entirely. Bed-rest is still the basis of treatment. Yet these operations would be an incalculable boon to hundreds of Alabama's tuberculous citizens if rightly performed when warranted.

S. B. McP.

PERTINENT FINANCIAL FACTS CONCERNING ALABAMA'S HEALTH DEPARTMENT

In 1914, the first full-time county health unit was launched in Alabama—in Walker County—which happened to be the second in the United States. At that time, and through 1918, the State appropriation

for all health work was \$25,000. At the end of 1918, twelve (12) units had been organized. The legislature of 1919, visualizing the vast possibilities of good for its people by encouraging the expansion and growth of such a program, gradually expanded the State's appropriation for health work during the next quadrennium, by annual increases, to \$150,000. Four years later, that is in 1923, twenty-two (22) of our counties had become organized and the experimental stage of the procedure had passed. Its soundness was recognized, not only by the legislature but also by the national experts in public health—the United States Public Health Service and the Rockefeller Foundation. It was at that time, also, that the State aid fund for county organization was provided by the legislature, whereby each county, as organized, received, annually, \$2500 for health work. During this quadrennium—that is from 1923 to 1927—through the generous financial support given the health program by the legislature, organization for health work grew apace and at the beginning of 1927 we find thirty-three (33) counties enjoying the benefits of this service. The legislature of 1927, in order to provide proper financial aid for the rapid expansion of this program to every county in the State, appropriated an increasing sum for the ensuing four years, reaching a climax, in 1930, of \$686,000, at which time it was felt that all of the counties might become organized.

At present, fifty-four (54) of Alabama's sixty-seven (67) counties are provided with health service through full-time local health units. This represents nearly 90 per cent of the State's population thus protected.

The present allotment of State funds for all health work—local and State—is \$686,000, based on the assumption of a completed organization in every county. Because of the fact that only 80 per cent of our counties are as yet organized, the Department, for the past several years, has been returning to the State Treasury the remainder of the unspent balance. For the fiscal year ending September 30, 1931, this sum amounted to \$68,370.41.

Thirteen (13) counties remain unorganized for local health work. These are

Autauga, Bibb, Butler, Chilton, Clay, Coosa, Fayette, Greene, Hale, Henry, Randolph, Russell, and St. Clair. The hope is entertained that, even in the face of depression, some, if not most, of these may fall in step. In this event, some of the State funds now available and unused, will be needed to launch and sustain them.

The service rendered the people of Alabama through its Health Department falls into two broad categories:

(a) The scientific, technical and consultative service on the part of the central organization in Montgomery, which can not be furnished by the smaller counties and which must be financed solely through State funds. Included in such service is that given through the State Laboratories and Vaccine Department, thereby saving the State and its people considerable sums; the service rendered through the Bureau of Preventable Diseases in the effort to curb tuberculosis and to stamp out epidemics of all kinds arising within the State; the service from the Bureaus of Engineering and Inspection in the control of water and milk supplies, sewage disposal, impounded waters, malaria, typhoid, hookworm and all forms of sanitation; the manifold data compiled by the Bureau of Vital

Statistics which could be had through no other service; these, and many other services, fall in the first category.

Already, extensive economies are now being practised in the central organization in Montgomery.

(b) Into the second category falls the field service in the various counties, in the financing of which, both the State and local agencies contribute.

Local appropriations for health work, made in normal times, are now being cut one-third, one-half, or even more, and some are being threatened with total abolition.

For the lean years immediately ahead, the financing of the fifty-four field units will constitute a major problem of the State Department of Health.

Of the \$686,000 now coming to the State Department of Health from State funds, \$275,000 is immediately being thrown back into the counties, in order to hold intact this field service now more vital than ever.

In any consideration of policies of retrenchment, careful thought should be given to making available funds to be discreetly used in rescuing threatened health units or in inaugurating new units in unorganized counties.

J. N. B.

DEPARTMENT OF PUBLIC HEALTH

BUREAU OF ADMINISTRATION

J. N. Baker, M. D.
State Health Officer in Charge

INCREASED USE OF RABIES VACCINE

Few states of the Union have attempted to do more for their people in the matter of protection against the horrible possibilities inherent in the bites from rabid animals than has Alabama. This State now furnishes, without charge, rabies vaccine to all in need of it and to all physicians upon request, as well as providing a medical fee for the necessitous case.

Inasmuch as such a service is both expensive and well worth while, it becomes the responsibility of the practising physician to exercise discretion and judgment in the careful selection of the cases which should receive treatment, as well as those cases, the history of which does not justify

its use. The July issue of the Journal carried a most timely editorial bearing on this phase of the question. The State Board of Censors, at its recent quarterly meeting, took cognizance of the marked upswing in the number of rabies treatments for the first six months of the current year, by the adoption of the following resolution:

RESOLUTION BEARING ON RABIES TREATMENTS ADOPTED BY THE STATE BOARD OF CENSORS,
JULY 8, 1932

Whereas, The number of persons receiving rabies treatment has increased from 1,785 in 1930 to 2,667 in 1931, and to 2,039 for the first six months of 1932, and

Whereas, This increase in the use of rabies vaccine is out of all proportion to the incidence of rabies among animals

and to persons actually exposed to rabies, and

Whereas, There is a certain element of risk to the patient who receives rabies vaccine, and

Whereas, The total cost to the State for the first six months of 1932 for indigent persons alone was \$15,345, as follows: Fees to physicians, \$13,640; cost of manufacturing vaccine \$1,705; therefore be it

Resolved, That it is the sense of the State Board of Censors that the physicians of this State be urged to exercise discretion and judgment in the administration of rabies vaccine, and that the treatment be recommended only for those persons who have actually been exposed to the virus.

BUREAU OF LABORATORIES

L. C. Havens, M. D., Director

EXTRACTS FROM ANNUAL REPORT, 1931

The volume of work showed an increase in both the diagnostic and vaccine divisions. The latter had a particularly active year, the first in its new quarters as a separate division. The manufacture of rabies vaccine, begun late in 1930, showed a large increase, 2667 treatments being used during the year, as compared with 1785 in 1930. Manufacture and free distribution of the vaccine resulted in a net saving to the State of \$27,475. The economic depression has resulted in a larger number of indigent patients, the State paying for physicians' fees in 1931, \$15,000.00.

Production of both typhoid vaccine and diphtheria toxoid increased over the previous year. Schick toxin, in the form of a stable dilution in peptone solution, was prepared for distribution for the first time. The preparation of tuberculin (O. T.) was also begun. The amounts of each vaccine made and distributed are shown in Table 1.

The diagnostic service continued to show growth. A total of 292,673 specimens were received for examination, an increase of 3.5% over 1930. Of unusual interest, as denoting the increasing appreciation of the value of cultures in the diagnosis of typhoid, is that the total of these—blood,

TABLE 1
Vaccine Production For 1931

PRODUCT	Amount Made (cc.)	Amt. Distributed (cc.)
Typhoid Vaccine	1,013,072	759,903
Diphtheria Toxoid	275,620	256,350
Schick Toxin	10,500	4,180
Rabies Vaccine*	3,966	2,637
Tuberculin	460	99
Sterile Distilled Water	144,750	144,750
Sterile Normal Salt Solution ...	13,710	10,090

*No. of treatments.

feces and urine—for diagnostic purposes, exceeded the number of Widal tests. In the Central Laboratory, the number of cultures was double the number of agglutination tests. Of 573 blood cultures 8% were positive; 12% of the feces specimens were positive, and about 5% of urine cultures, showing that none of these should be ignored in the attempt to establish a diagnosis.

The first year's activities of the branch laboratory at Dothan make a creditable showing. This laboratory apparently fills a definite place in the state-wide service, giving the southeastern counties diagnostic facilities for which they formerly had to depend on the Montgomery Laboratory. The removal of these counties from the Montgomery territory resulted in a corresponding decrease in the number of specimens examined by the Central Laboratory. The total number of specimens received by each laboratory in 1930 and 1931 was as follows:—

Laboratory	1930	1931	Increase %
Central Laboratory	81,044	60,630	24.0*
Birmingham	96,246	97,461	1.2
Mobile	28,309	29,631	4.6
Tennessee Valley	30,636	28,554	6.6*
Tucaloosa	16,549	19,305	17.0
Anniston	14,680	17,192	17.0
Selma	14,332	17,103	19.5
Dothan		13,013	
Huntsville		9,821	
Total	282,418	292,673	3.5

*Decrease.

The practice of sending specimens of various kinds at regular intervals from the Central Laboratory for each laboratory to examine and report upon was continued, the results indicating the maintenance of the usual standards of accuracy and uniformity of technic.

Manual of Standard Methods.—A further step toward the insurance of uniformity and accuracy of methods was the collection, in the form of a manual, of the methods and procedures used in the State Laboratories. The preparation of this manual occupied a considerable portion of the time of the staff of the Central Laboratories during the past year, but it has already proved worth while, since, for the first time, all of the methods used are readily available for frequent revision necessary to a manual of this character.

The production of diagnostic serums and antigens for use in all of the laboratories is an important function of the Central Laboratory. Silver nitrate ampules for free distribution are also prepared by the diagnostic division. The amounts of these products for 1931 were as follows:—

Silver nitrate ampules	46,896	
Kolmer antigen	946	cc.
Kahn antigen	9,180	cc.
Bacterial antigens	14,700	cc.
Anti-sheep hemolysin	109	cc.
Agglutinating serums	536	cc.

Antigenic Properties of Rabies Virus:—The filterable viruses have recently received an increasing amount of study. It is of considerable importance, both from theoretical as well as practical view-points, to determine whether this peculiar and little known group behave antigenically like the ordinary bacteria, or whether, as some believe, they resemble toxins. Evidence is accumulating that the viruses possess the same antigenic properties that bacteria do. Vaccinia, for example, stimulates the formation of agglutinins in the same manner as the typhoid bacillus. There are conflicting reports in the literature regarding the antigenic nature of rabies virus, some investigators claiming to have obtained complement fixation and precipitation, others being able to demonstrate only viricidal antibodies. During the past year we have investigated the antigenic nature of rabies virus and have obtained evidence of flocculation and complement fixation, thus furnishing another example of the antigenic similarity of viruses and bacteria. The report of these experiments will be published in the *Journal of Infectious Diseases* in the near future.

The question of the plurality of strains of rabies virus has been raised more than once, but has never been definitely settled. In connection with our work on the flocculation or agglutination of rabies virus by specific immune serum we have obtained evidence of antigenic differences between strains: i. e., some strains flocculate in one serum but not in another, produced from a different virus. The study is being continued.

Cerebrospinal Meningitis at the State Penitentiary.—An epidemic of meningitis at Kilby Prison in February taxed the capacity of the Central Laboratory. When the outbreak came to the attention of the State Health Department cases had been running over a period of several months and at an increasing rate. It was decided that the only measures which offered any promise of a speedy control of the situation were the culture of all inmates for carriers and the strict isolation of those found, together with a more rigid quarantine of the active cases. This involved the preparation of blood agar and swabs for cultures of some 1500 persons. With the cooperation of the Bureau of Preventable Diseases these cultures were made and examined within the space of a week, about 15% being found positive. These carriers were isolated from the rest until three successive cultures were negative. Fireless cookers were used to transport the warm plates of blood agar between the prison and the laboratory. Excellent cooperation by the prison authorities resulted in an expeditious handling of the survey.

Publications.—The following papers were published during 1931: Flocculation Experiments with Variola and Vaccinia Virus, *Amer. J. Pub. Health*, 1931, 21, 329 (April): The significance of Typhoid Agglutinins in the Serum of Normal Persons; *So. Med. J.* 1931, 24, 652 (July): The Significance of Agglutinins in Normal Persons; *J. Prev. Med.* 1931, 5, 295 (July).

Journal Club.—This was the third year of regular bi-weekly meetings. The current journals are abstracted and reported on by the regular members to whom they are assigned. In addition, reviews of special subjects and talks of general interest by visitors constituted the program at some of the meetings. In order that the branch

laboratories may have the benefit of the current literature without the expense involved in duplicating subscriptions, a circulating library has been instituted.

**BUREAU OF PREVENTABLE
DISEASES**

D. G. Gill, M. D., Director

TYPHOID FEVER AMONGST CONTACTS

Typhoid fever may be spread through any one of numerous media, such as water, milk, food, flies, etc., but the human case or carrier is always the ultimate source of infection. Much has been done to eliminate the disease through the safeguarding of water, milk and food supplies, through the installation of proper sanitation, and through the use of typhoid vaccine. In spite of all the work that has been and is being done, however, cases of the disease continue to occur.

At present it is probably not possible to prevent all of these cases but it should be possible to prevent secondary cases occurring amongst other members of the family and amongst the neighbors. These secondary cases now constitute a considerable proportion of all the typhoid in the State. It is not at all uncommon to find from two to six cases in a family and on investigation learn that one member of the family was taken ill from two to three weeks before the others. It is, of course, possible for all to have been infected from the same source but it is much more likely that lack of care in the home was responsible for the later cases.

Certain hygienic rules should be observed in every case:

- (1) Isolate the patient and prohibit visiting.
- (2) Disinfect all discharges from the patient.
- (3) Disinfect all bedding, linens, dishes, etc., used by the patient.
- (4) If possible do not allow the nurse to cook for other members of the family.
- (5) Have the patient examined before release to determine whether a carrier or not.

If, in addition to these precautions, all those exposed are given typhoid vaccine, the number of contact cases should markedly diminish.

BUREAU OF VITAL STATISTICS

W. T. Fales, Director

**THE TREND OF TUBERCULOSIS IN
ALABAMA 1923-31**

From 1923-1931 there was a decrease of 15.4 per cent in the death rate from all forms of tuberculosis in Alabama. For the white population the decrease was 18.3 per cent and for the colored population only 12.8 per cent. Further, if the actual rates for the more recent years are studied, one finds that the death rate in Alabama has remained practically stationary since 1927, in which year it was 86.5 against 85.7 per 100,000 population in 1931.

The above observations were made by studying a recent report of the U. S. Public Health Service giving a summary of provisional death rates from selected causes for 1931 in a group of sixteen states, among which was Alabama. Since the U. S. Bureau of the Census has not yet issued death rates by cause for all states, even for the year 1930, it was thought a study of some of these provisional rates might be of interest.

The death rates from tuberculosis, all forms, for the sixteen states and the District of Columbia, and for the four southern states represented in the tabulations are given in Table 1. We have included also, similar rates for the industrial policy holders of the Metropolitan Life Insurance Company and for the white and colored population of Alabama, the latter taken from our own records. It will be seen that there is a general downward trend of rates in all areas.

In order to study the decrease more exactly, straight line trends were fitted to each set of these data with the interesting results given in Table 2. In this table we learn that the reduction in the death rate from tuberculosis for all sixteen states was 29.3 per cent between 1923 and 1931, against 15.4 per cent in Alabama. Approximately the same reduction, 28.6 per cent occurred in the experience of the industrial department of the Metropolitan Life Insurance Company. The experience extends over the entire United States and is largely urban in character. Tennessee and Louisiana also had a large decrease in death rate from all forms of tuberculosis,

viz: 26.6 per cent and 28.1 per cent respectively.

We see, therefore, that the decrease in the death rate from tuberculosis is much less in Alabama than that found in other areas. While improvement in reporting and in certification of causes of death may account in part for the failure of Alabama to show a greater decrease and its tendency to remain stationary during the last few years, it is believed that some other factor or factors are operative.

Today, the importance of family contact in the spread of tuberculosis is fully understood. Control must be based on the early recognition of the disease followed by isolation, instruction and medical care of the patient and hygienic supervision of the family contacts, especially the children.

Since late in 1930, the State Department of Health of Alabama has had traveling diagnostic clinics which, on invitation of the various county medical societies, have held one or more clinics in the several counties of the State. These have met with good response, but the work of the clinic can pro-

duce effective results in lowering the toll from this cause only providing that physicians of each county follow up the clinic work by insisting that patients, sent by him to the clinic, come back to him for consultation and advice upon their condition. While this is more obviously essential in the case of those persons diagnosed positive, the suspected cases and those with deferred diagnosis should also receive hygienic advice.

Further, the physicians should carefully select those cases in which the County Nurse can assist him in instructing the patients and family. Here the physician should tell the patient that he is giving specific instructions to the County Nurse relative to their hygienic supervision.

Finally, tuberculosis can be brought fully under control only as all agencies—doctors, health officers, and the public—face the problem of finding the positive cases and then following up cases and contacts to the end that the foci of infection are isolated and instructed in the proper care of themselves and others.

TABLE I
MORTALITY FROM TUBERCULOSIS IN SEVERAL STATES AND IN A GROUP OF WAGE EARNERS, 1923-31

Area	1931	1930	1929	1928	1927	1926	1925	1924	1923
Sixteen States and District of Columbia	66.3	70.3	75.4	79.5	80.6	87.8	88.0	91.5	95.2
Industrial policy holders M. L. I. Co.:									
Ages 1 year and over	76.7	81.3	87.3	90.6	93.8	99.5	98.2	104.4	110.5
ALABAMA (Total)	85.7	86.0	85.7	89.6	86.5	93.7	99.2	96.2	98.2
White	47.2	49.1	48.4	50.1	48.2	52.1	56.8	57.2	55.9
Colored	156.6	152.4	153.5	162.0	156.0	169.2	176.4	167.1	175.0
LOUISIANA	81.5	84.1	86.3	87.7	93.7	101.7	104.4	109.7	108.6
TENNESSEE	107.2	115.7	120.3	129.6	129.1	144.6	135.1	144.9	148.7
VIRGINIA	87.0	85.0	91.4	103.9	109.8	111.5	114.6	115.3	123.6

TABLE II
PERCENTAGE REDUCTION IN CALCULATED DEATH RATES FROM TUBERCULOSIS IN SEVERAL AREAS IN EIGHT YEARS 1923-1931

Area	Percentage of Reduction
Sixteen States and District of Columbia	29.3
Industrial policy holders M. L. I. Co.:	
Ages 1 year and over	28.6
ALABAMA (Total)	15.4
White	18.3
Colored	12.8
LOUISIANA	28.1
TENNESSEE	26.6
VIRGINIA	31.6

BUREAU OF CHILD HYGIENE AND PUBLIC HEALTH NURSING

Jessie L. Marriner, Director

REMEMBERING WHEN*

"Most of us, straddling more than one epoch, delight in remembering when."

It was Children's Year. The United States had "come in" to the Great War. General Pershing had announced, "LaFayette

*First in a series to appear under this caption. The second will be published in an early issue.

ette, we are here." The Women's Committee of the Council of National Defense was working feverishly, in co-operation with the Federal Children's Bureau, to direct the thought of the nation toward conserving the health and well-being of its children. A great orgy of weighing and measuring was instituted. Whenever possible, this activity was made more significant by a medical examination of the little folks.

In the midst of the tumult a pandemic of influenza swept throughout the land. Nurses and doctors were in sharp demand but there were few to be had. The late Dr. Samuel Wallace Welch, Alabama's State Health Officer, requested the Federal Children's Bureau to make some studies in Alabama of the conditions affecting the well-being of her children. Studies were made in Dothan, Selma and Gadsden. In the latter place a moving picture film, "Our Children", was made and offered for sale to health departments for use in educational programs.

The findings of these studies showed defective reporting and recording of births and deaths. However, a house to house investigation of information from all available sources revealed many infant deaths which might have been prevented by prompt medical attention and much infant suffering which might have been prevented by intelligent home care. It was also revealed that deaths of mothers in childbearing occurred more frequently than is consistent with adequate medical service at delivery and during the pregnant period.

County Health Units had taken their places in barely a dozen counties when the war came to an end. There was dire need of intelligent workers in the health field, both in the counties and at the directing end in the Central Office. The expected influx of medical men and nurses returning from army service failed to take place. There followed a rather hectic period of uncertainty for everybody concerned. Young medical men and nurses who had seen service overseas seemed to be passing through a phase of instability, wondering "What shall I do next?". The problem of unmet health needs was reflected in popular magazines under such titles as "What Has Become of the Country Doctor?" and "The White Cap Famine". The

latter discussion proposed a solution of the scarcity of nurses by training sub-nurses, quickly and cheaply.

The State Health Officer of Alabama had visions of a state-wide service which should continue the local health measures instituted by the Army in its cantonment zones and develop, on a governmental county basis, health units which should wage war on all the conditions known to be responsible for a lowered health status and for an unwarrantably high rate of deaths from certain diseases. Funds available for this service consisted of a meager \$25,000 State appropriation for health work. Certain counties, notably, Walker, Tuscaloosa, Talladega, Jefferson and Elmore had made modest appropriations for full-time health service. Such a project called for local administrators who must be doctors. There must be helpers who might be nurses or might be lay men or women but who most assuredly would need to be trained for their work and given helpful oversight and guidance.

Up to this time, 1918, very few State Boards of Health had employed nurses except as helpers in the field programs of one or more of the departmental bureaus which included the conduct of nursing procedures. Dr. Welch, always original and sufficiently daring to risk the danger of occasional mistakes, decided upon an innovation.

There should be established a nursing bureau which, in addition to performing such service in the way of nursing procedures as might be needed in any of the State health programs, would attempt to serve as an educational and promotional force, interpreting for the general public and to professional groups, nurses, teachers and others, the aims and purposes of modern health programs, inculcating, insofar as possible, by individual conference and the written or spoken address, a right mental attitude toward the importance of health protection as a governmental function. Graduate nurses, together with students in schools of nursing, would form the group which should receive first attention, the objective being to develop an understanding group of potential health workers from which could be drawn future personnel for county health units.

A private donation made possible the employment of a director for such a bureau for the limited period of six months. During the specified six months a meeting of the legislature was scheduled. An increase of the health appropriation could be sought at that time.

The problem of finding a director for the proposed new bureau was solved by employing the Children's Bureau worker who was on the ground and had an already awakened interest in the health problems revealed by the Children's Bureau studies.

A well remembered interview between the State Health Officer and the nurse whose employment he was considering, settled neatly and with the utmost dispatch questions that have proven much too complex and troublesome to be so simply handled in larger organizations during later years.

"Will your nursing bureau occupy a co-ordinate place in your organization, Dr. Welch, or will it be a sub-bureau of one of the other bureaus?"

"Our organization is still in the formative stage. There is the Director of a Bureau of Vital Statistics, the Director of a State Laboratory, the Director of Sanitary Engineering and several clerks. I am considering now the employment of an educator to head up a Bureau of Venereal Disease Control. None of these bureau chiefs would have the faintest idea what I am driving at in employing you. The Venereal Disease Control Bureau is the only one that would even be interested in utilizing your services in nursing procedures. The Sanitary Engineer will have to teach you rural sanitation. As for your place in the organization, you will be a member of my official family. If you have the courage, and"—with a showing of crow's feet, "if you have the unlimited audacity to undertake the kind of job I have outlined vaguely, I believe I had better keep the oversight of your activities in my own hands."

The nurse concurred in the decision. It was so ordered. Thus, came into being the Bureau of Public Health Nursing of the State Department of Public Health of Alabama.

The story of its early struggles, of its successes and its failures, furnishes to the student of social progress a graphic picture of pioneering in the health field.

BUREAU OF ENGINEERING

G. H. Hazlehurst, Director

MOTION PICTURES IN PUBLIC HEALTH EDUCATION

Contributed by F. B. Wood

Before a disease can be prevented on a group basis, it is essential that the group have knowledge of the ways of transmission and the measures of prevention. To see that this knowledge is disseminated is one of the functions of organized medicine. It is a special duty of the agencies engaged directly in public health work.

The value of visual education as a means to this end has long been recognized and used by health workers. Charts and photographs, while not eliminated, were largely superseded by lantern slides. These in turn gave way to motion pictures shown at places equipped with stationary machines. In its desire to take the message of prevention further than large population groups, portable projectors were purchased by the county health units to the limit of funds available.

These machines, showing the commercial size films of 35 millimeter width, had the disadvantage of high cost, excessive weight and volume, expensive films and high current and maintenance charges. Many of the county health units, after purchase, were not able to keep this type equipment functioning, but much knowledge was brought to the people by this means.

With the progress made in the motion picture field, and the market offered in amateur photography and projection, there was developed the small 16 millimeter cameras and projectors. This equipment offered the opportunity of cheap first cost, cheap films, lack of weight, film production to fit local needs and cheap maintenance charges.

While there are many limitations to this type equipment, its advantages far outweigh its disadvantages, and after a thorough study of the subject, it was thought it would be adaptable to health work and could be used to accelerate public education. In 1930 and 1931 the Department of Public Health produced three 16 millimeter films to be used in conjunction with other available films dealing with typhoid, dysentery, hookworm, malaria and diphtheria. These were given the following titles:

Prevention of Malaria by Screening and Mosquito-Proofing of Residences.
Prevention of Diseases by Sanitation.
The Set-Up, Organization and Activities of an Alabama County Health Unit.
Prevention of Disease by Drainage.

At the present time a film, "Impounded Water and Malaria", is being produced, while another on Dental Hygiene is contemplated in the near future.

Groups have been reached in schools, churches, civic clubs, civic bodies, scientific bodies and, in fact, largely where and for what purpose people congregate, in thirty-four of the counties to date. As opportunity presents, it is the intention to reach all counties. The results have been appraised and found to be of value. This equipment has added a valuable tool to be worked with for the benefit of the people in aiding in the control of the communicable diseases.

(A later article will appear describing the field work and some results obtained in the various counties.)

BUREAU OF INSPECTION

C. A. Abele, Director

A MARKED TENDENCY IN MILK PRODUCTION

A recent careful survey of the dairy industry and the number of private cows being milked in those cities in which the Standard Ordinance or the State Board of Health Milk Regulations are in effect, has revealed an astonishing and disconcerting situation.

It has been common knowledge that the milk distributed by dairymen and milk plants constitutes only a part of the milk consumed in any community. Data obtained in the course of a survey in the spring of 1931 indicated that this proportion varied from an average of 33.6% in towns of less than 1000, to 89.7% in cities over 50,000; the average for the 45 communities surveyed being 64.3%.

Although the recent survey is not complete—that is, has not included all of the communities included in the 1931 survey—it is quite evident that the proportion of the total milk consumption produced by family cows has materially increased, re-

sulting in a corresponding, or even disproportionately greater, decrease in the percentage of milk distributed by the dairy industry.

Figures for 16 of the 45 communities surveyed in 1931 are available. In only 3 of these has the proportion of commercially produced milk to the total consumption increased, and only slightly in these cases. The percentage of the total consumption produced and distributed commercially ranged from 11.4% in Linden to 91.4% in Selma. But the striking fact is that in cities such as Florence, Huntsville, and Anniston these percentages should be as low as 30.5%, 28.9%, and 52.7%, respectively.

The reason for this increase in volume of family cow milk is obvious; the results are not so evident. The first effect is, of course, a decline in the business and profits of milk distributors. Drastic price cutting has usually occurred. This commercial aspect is of no direct concern to health authorities, although indirectly it increases the difficulties of maintaining desirable physical conditions at dairy farms and milk plants. The second effect appears to have been an increase in average per capita milk consumption, at least in most of the communities. This is advantageous from a dietary standpoint. The fact must not be lost sight of, however, that the increase in consumption has consisted almost entirely of raw milk, much of it produced under the type of conditions commonly prevailing in backyard dairies.

Many of these family cows are not tuberculin tested. A certain proportion of them are infected with contagious abortion, and the loss of a calf bears, in the mind of the owner, no significance to the safety of the milk subsequently produced by that cow. The brightest aspect of the situation is that the greater proportion of the milk produced by family cows is consumed as buttermilk.

Health officers and physicians should recognize the dangerous possibilities of the present situation, and caution family cow owners, and those who obtain milk from neighbors, about the dangers from tuberculosis and undulant fever, and urge home pasteurization. A bulletin on this subject is available to those who write for it.

CURRENT STATISTICS

State Department of Health

*PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA

	1932 July	1932 June	Total Cases to Date	
			This Year	Last Year
Typhoid	142	54	408	320
Typhus	17	29	81	24
Malaria	280	188	815	955
Smallpox	28	42	453	277
Measles	3	34	256	9083
Scarlet fever	54	31	535	813
Whooping cough	175	176	1190	544
Diphtheria	70	42	592	567
Influenza	29	98	2586	5751
Mumps	73	51	779	1026
Poliomyelitis	3	0	14	27
Encephalitis	2	2	10	33
Chickenpox	21	44	875	1459
Tetanus	8	8	39	20
Tuberculosis	487	339	2781	3143
Pellagra	128	107	491	778
Meningitis	5	4	43	180
Pneumonia	43	88	1860	2808
Syphilis (private cases)	204	230	1289	930
Chancroid (private cases)	2	2	29	39
Gonorrhea (priv. cases)	89	119	813	953
Ophthalmia neonatorum	2	0	14	9
Trachoma	1	0	1	2
Tularemia	4	2	27	5
Undulant fever	4	1	10	8
Dengue	0	0	2	1
Rabies	0	0	0	0

*As reported by physicians and including deaths not reported as cases.

PROVISIONAL MORTALITY STATISTICS

Alabama, June 1932

	Number of Deaths Registered June 1932			Annual Rate per 100,000 Population		
	White	Black	Total	June 1932	June 1931	June 1930
ALL CAUSES	1184	1078	2262	1017.7	1077.9	1270.2
Typhoid fever	1	6	7	3.1	4.5	7.8
Smallpox						
Measles					5.0	3.2
Scarlet fever	2	2	4	0.9	0.4	0.9
Whooping cough	15	12	27	12.1	5.0	16.5
Diphtheria	2	2	4	1.8	0.4	
Influenza	20	10	30	13.5	16.3	10.1
Pneumonia, all forms	52	29	81	36.4	64.4	59.6
Poliomyelitis	2	2	4	0.9	0.9	0.5
Tetanus	3	1	4	1.8	3.6	0.5
Tuberculosis, all forms	65	137	202	90.9	86.6	81.6
Tuberculosis, pulmonary	57	129	186	83.7	78.0	69.2
Malaria	8	10	18	8.1	8.2	9.6
Cancer, all forms	99	43	142	63.9	60.8	55.5
Diabetes mellitus	13	7	20	9.0	8.6	9.2
Pellagra	19	21	40	18.0	24.5	39.9
Cerebral hemorrhage, apoplexy	33	45	128	57.6	61.7	78.9
Diseases of heart	137	108	245	110.2	128.3	148.6
Diarrhea and enteritis						
Under 2 years	44	21	65	29.2	37.6	88.5
2 years and over	15	7	22	9.9	13.6	24.8
Nephritis	98	93	191	85.9	100.2	105.0
Puerperal state, total	25	19	44	19.8	16.3	18.3
Puerperal septicemia	6	6	12	5.4	4.5	5.0
Congenital malformation	16	1	17	7.6	7.7	8.2
Congenital debility and other diseases of early infancy	72	47	119	53.5	51.2	69.7
Senility	12	19	31	13.9	12.2	20.6
Suicides	17	2	19	8.5	13.6	7.3
Homicides	21	35	56	25.2	24.5	17.0
Accidental burns	3	1	4	1.8	5.0	6.4
Accidental drownings	6	10	16	7.2	10.9	10.5
Accidental traumatism						
by firearms	2		2	0.9	2.3	3.2
Mine accidents	3		3	1.3	1.4	2.7
Railroad accidents	1	5	6	2.7	2.3	4.1
Automobile accidents	17	7	24	10.8	16.8	21.1
Other external causes	29	26	55	24.7	22.7	22.9
Other specified causes	224	161	385	173.2	158.7	203.6
Ill-defined and unknown causes	58	193	251	112.9	101.6	113.7

Book Abstracts and Reviews

The Purchase of Medical Care Through Fixed Periodic Payment By Pierce Williams, assisted by Isabel C. Chamberlain. Published by The National Bureau of Economic Research, Inc., New York, 1932. 308 pages. Cloth. \$3.00.

"The purchase of medical care through fixed periodic payment" refers to an arrangement whereby the employer and employee contribute toward a common fund from which are paid the fees for medical, dental, and hospital service. The arrangement by which the medical profession is bound by contract and that in which the physicians receive compensation may be worked out in many ways. There may be a contract at a specified salary, or a specified fee for each service rendered. A plant may employ one or more physicians, may employ a clinic group, or may allow the employee free choice of any member of the county medical society.

The National Bureau of Economic Research was invited by the Committee on the Cost of Medical Care of the American Medical Association to make a survey of the extent to which the American people use the principle of insurance in order of secure medical and hospital care. The report describes in detail the various plans by which an organization supplies to its employees medical and hospital care, not only for industrial accidents, but for illness and accident acquired when not in line of duty. The report deals entirely with facts—methods used, sample contracts, number of people treated, costs to the individual employee, costs for various services, arrangements between employer and employee, arrangement between employer and physician or hospital, state regulations, etc. There is no space devoted to opinions of the value of this method to the employee and to the physician.

It might be suggested that through some plan similar to those described in this report, physicians and hospitals might work out a scheme satisfactory to all concerned.

C. K. W.

The Collected Papers of the Mayo Clinic and the Mayo Foundation for 1931. Volume XXIII. Edited by Mrs. Maud H. Melish-Wilson and Richard M. Hewitt, B.A., M.A., M.D. Octavo volume of 1,231 pages with 265 illustrations. Philadelphia and London: W. B. Saunders Company, 1932. Cloth. \$13.00 net.

The twenty-third volume of "Collected Papers of the Mayo Clinic and the Mayo Foundation" contains over 175 articles dealing with a large variety of medical subjects. This number comprises less than a third of the total number published by the Mayo Staff during the year of 1931. In the selection of papers for inclusion in this volume, the interest of the practitioner rather than that of the research worker was consulted.

Any paper which emanates from the Mayo Clinic bears a certain stamp of authority. Most of the procedures described in these articles have been thoroughly tested and found of value. Those papers which deal with statistical reports are of particular value because of the large number of cases involved. Of particular interest are the articles dealing with esophageal diverticula, diseases of the stomach, jaundice, neurogenic disturbances of the bladder, hyperthyroidism, hemopathology, and diseases of the vascular system.

C. K. W.

THE JOURNAL

OF

The Medical Association of The State of Alabama

Published Under the Auspices of the Board of Censors

Vol. 2, No. 4

Montgomery, Ala.

October 1932

PRIMARY PNEUMOTHORAX WITH CONTINUOUS TUBULAR DRAINAGE FOR ACUTE EMPYEMA*

MAURICE J. GELPI, A. B., M. D., F. A. C. S.
Senior Staff, Hotel Dieu
New Orleans

Hedblom's historical review¹ of the treatment of empyema takes us as far back as Hippocrates and Galen. Since those early days, so many suggestions have been made for the treatment of empyema, and especially of acute empyema, that one hesitates to discuss the subject again, without presenting something radically new for consideration. However, my impression is that there is still so much wide open drainage being done, that it might be of some value to stress once more the possibilities and advantages of closed drainage in acute empyema and to emphasize certain points in connection with this type of treatment. It would bring us too far afield to discuss seriatim all the ingenious devices that have been suggested and applied with more or less success for the treatment of empyema by the closed method. I must, however, make one exception and refer to the work of Danna, who has recently reported a series of thirty-five cases successfully treated by aspiration. Danna's² method consists in aspiration or repeated aspiration with air replacement of the exact amount of fluid obtained. At each sitting, complete emptying of the empyema cavity is sought. It was from this source that I learned of the advantage of producing pneumothorax

at the time of the primary drainage of the empyema cavity.

Our plan therefore, will be to outline a method of applying closed drainage, which is simple and easy of execution, which fulfills all the requirements of an efficient treatment and which in our own hands has been responsible for very gratifying results.

What is the objective of an efficient treatment for acute empyema? Broadly speaking, it is to save life and minimize and shorten morbidity. This means that the treatment should also tend to avoid the development of chronic manifestations, such as the development of fistulas, persistent pockets, and bronchial fistulas. Speaking practically, it should dispose of the pus, provide favorable conditions for the reexpansion of the lung, and, by this means, tend to bring about the automatic sterilization of the cavity. The technique we have utilized fulfills these requirements and can be used in children and in adults. It can be used in unilateral or bilateral empyema. It can be used with concurrent pneumonia, bronchial fistula, or abscess of the lung. Furthermore, the method usually obviates the necessity for rib resection.

The steps in the technique are these:

(a) After localizing the pus cavity by physical signs and the x-ray, under local anesthesia, the cavity is aspirated at a dependent point. Material is collected for cultures and the needle is replaced by a trocar and canula.

(b) The trocar is then removed and quickly replaced by a catheter of the same size, previously clamped at the distal extremity. An attempt is made to insert the catheter so that it will point downward. The canula is then removed, leaving in the catheter forming a fairly tight joint with the thoracic wall. A small dressing is applied at this joint and the tube is firmly

*Read before the Association in annual session, Mobile, April 21, 1932.

*From the Department of Surgery, Postgraduate School, L. S. U. Medical Center.

(1) Hedblom, C. A.: The Treatment of Chronic Empyema, *Ann. Surg.* 72; Sept. 1920.

(2) Danna, Joseph A.: The Treatment of Empyema by Aspiration and Air Replacement Without Drainage, *J. A. M. A.* 96, May 2, 1931.

held in place by means of zinc oxide plaster. This procedure has been described many times and has been in rather common use for a number of years. It is essentially the procedure recently referred to by Hedblom³, Bettman⁴, and others.

(c) The next step, however, differs from the procedure in common use in that at this first sitting, each 50 cc. of pus aspirated is immediately replaced by 50 cc. of air. This is repeated until the cavity is completely empty. By means of this primary pneumothorax, the complete emptying of the cavity can usually be accomplished with very little discomfort to the patient. After the first sitting the lung is permitted to expand as much as it will. Therefore, ordinarily no further pneumothorax is instituted.

(d) The tube is then clamped and fixed to the chest with gauze and zinc oxide plaster.

(e) Following this, every two or three hours, a syringe is connected to the tube, the clamp removed and all available pus is aspirated. Care is taken to reclamp the tube before disconnecting the syringe. No air is injected at these subsequent aspirations unless aspiration seems to produce a cough or unless the tube seems to be obstructed. An exception might also be made when there is a coincident abscess of the lung. In the case of an obstructed tube, no more air is ever injected than the equivalent amount of fluid aspirated at that particular sitting. No lavage is done, unless an obstruction in the tube fails to be dislodged by injection of a small amount of air. In this event the tube is cleaned out with a small amount of Dakin's solution.

(f) As the reaccumulation of fluid diminishes, the frequency of aspirations is also diminished until after a while, single, daily aspirations are sufficient.

As regards after care, the patient is at first treated in bed but as soon as the temperature, pulse, and respiration permit, he is allowed to sit up. Observations must be made as to the development of any radical changes in the relative positions of the catheter and the dependent portion of the

cavity. Such a change may require the readjustment of the catheter, so as to secure efficient drainage. The tube is left in until such time as the drainage becomes inconsiderable or ceases entirely and until such time as the x-ray corroborates the disappearance of the cavity.

The advantages claimed for this method of treatment are:

I. The empyema cavity is completely emptied from the beginning. This diminishes absorption from the bulk of the septic material at one stroke.

II. By means of the catheter, provision is made for the disposal of the reaccumulation of pus which we are told in one case amounted to as much as fifty gallons. Thus, prolonged, efficient, adequate drainage is obtained without further surgery.

III. There is no initial collapse or profound depression, accompanied by coughing, clammy sweat, and alarming acceleration of pulse rate. This is due to the absence of sudden disturbance of the mediastinum by replacing the intrathoracic hydrostatic pressure by an equivalent pneumatic pressure.

IV. The patient remains clean and comfortable instead of being bathed in pus as in open drainage.

V. The lung is permitted to reexpand before unyielding, fibrous adhesions form, a condition which is essential for the obliteration of the empyema cavity.

VI. Septic absorption is reduced to a minimum, thereby exerting a favorable influence on respiration, pulse, temperature, the kidneys and the general condition of the patient.

It is well realized, that the closed method of drainage with primary pneumothorax is not entirely free from certain imperfections. The cases under treatment require close supervision to maintain efficient drainage. X-rays must be used at rather frequent intervals to check up. Prolonged pressure by the tube can cause necrosis of a rib though in our experience the condition takes care of itself. The method, therefore, is not offered as a panacea for all the ills incident to acute empyema, but as the most satisfactory treatment we have tried in a constantly growing series of cases.

(3) Hedblom, C. A.: *The Treatment of Empyema*, J. A. M. A. 97, Dec. 26, 1931.

(4) Bettman, R. B.: *The Treatment of Acute Empyema*, S. G. & O. LIV, 1, Jan. 1932.

THE SURGICAL TREATMENT OF NEURALGIA*

ADRIAN S. TAYLOR, M. D.
Birmingham

Neuralgia, or nerve pain, is a condition requiring treatment even in times of economic depression. Pain is always the most common symptom of those who seek relief. In times like these, when the nervous system is undergoing unwonted strain, painful affections involving it are seen with increasing frequency by all those who have power to relieve this suffering.

The scope of this paper does not admit of discussion of all of the types of neuralgia; those occurring in the face and head—all amenable to surgical treatment—alone will be considered.

In 1908, Sluder¹ described "lower half headache", consisting of pain about the eye, the upper jaw and the teeth, with earache and pain in the mastoid, with a tender point about 5 cm. behind it. The pain also extends to the occiput, neck, shoulder, scapula, arm, forearm, hand and fingers. Sluder showed that this disease is probably often caused by sinus infection and may be relieved by cocainization of Meckel's ganglion. Permanent relief is to be expected from removal of the local foci. This pain must be distinguished from the more dramatic pain of tic douloureux, later to be described, and the relief afforded by cocainization of Meckel's ganglion has been used by the writer as a diagnostic point.

Five recent cases have called attention to the frequency of neuralgia involving the ascending branches of the upper cervical nerves. In these cases the pain was unilateral and followed the distribution of the occipital and posterior auricular nerves, and was at once relieved by a novocaine barage extending from the posterior occipital protuberance to the mastoid tip. Division of all ascending nerve branches between these points was done for two patients. Complete relief was afforded, and will undoubtedly continue until regeneration of these nerves takes place. A hypertrophic

cervical arthritis is a probable cause of this type of pain.

There is a dreadful paroxysmal type of pain known as tic douloureux which involves the fifth and the ninth cranial nerves. This is a definite disease, yet one of unknown etiology and unknown pathology, but one with a long recognized and well described symptomatology. Glossopharyngeal tic douloureux is less common than the trigeminal neuralgia, but is perhaps more severe. The pain is unilateral, begins in the region of the tonsil, and may radiate to the ear, mandible, or neck. Treatment is by intracranial division of the ninth nerve.

Trifacial neuralgia manifests itself by paroxysmal attacks of pain limited to the regions of distribution of the fifth cranial nerve. It is unilateral in almost all cases, is a disease of middle and old age, and only occasionally seen in those under thirty. Pain is the principal symptom of the disease, occurs in paroxysms usually in daylight hours, less often at night, and periods of freedom from pain are common. The first onset of pain is connected with some possible source of infection about the face, and many futile operations are constantly being done on teeth and sinuses in an effort to eradicate a possible source for the pain. It is reasonable to suppose that a disease so definitely confined to a structure as the fifth cranial nerve might be caused by an ascending infection along one of its many terminal branches, but no evidence has been adduced to show that any demonstrable anatomic change occurs in nerve trunk, ganglionic cell or central centers. Certain indefinite cellular changes have been described in the Gasserian ganglion itself, but there is no evidence that any of them are characteristic of the disease.

While the essential nature of this affliction is not understood, its clinical picture is clear cut and well defined. The attacks of pain are initiated by stimuli to certain so-called "trigger zones", small areas often about the angle of the mouth where irritations initiate spasm-like explosions of pain which radiate centralward along the main trunk, but often overflow into areas supplied by fibres from other main divisions of the nerve. These attacks last for

*Read before the Association in annual session, Mobile, April 21, 1932.

1. Sluder, G.: The Role of the Sphenopalatine (Meckel's) Ganglion in Nasal Headache, New York M. J. 87: 989, 1908.

a moment or two, and may re-occur with great frequency. They usually do not come at night and are controlled only by doses of morphine or alcohol large enough to dull the whole sensorium. Patients with tic douloureux seldom contract the morphine habit.

A word of caution is necessary as to indiscriminate removal of teeth for pain of true neuralgia. Seldom does a patient with tic douloureux reach the neurosurgeon with any teeth left in the affected jaw, and in no case has relief from the pain of this disease followed any form of dental operation.

Permanent or temporary relief may be offered to patients suffering from tic douloureux. Permanent relief is possible by a highly perfected operation upon the sensory root of the nerve, or by the sometime successful, even though ill-advised injections of alcohol into the ganglion itself. Temporary relief may be offered with comparative safety by alcoholic injections into the second and third divisions as they emerge from the skull, or by peripheral injections or neurectomies of the terminal branches of the nerve. Alcoholic injections into the second and third divisions are useful in affording relief lasting often for a year or more, and have the great value of making it possible for the patient to evaluate the resulting anesthesia, and to choose between his former pain and his present anesthesia. In cases of false neuralgia, the patient is apt to rebel over the "wooden face", while in true neuralgia, he gratefully accepts permanent loss of sensation over the entire half of his face in lieu of his previous unbearable torture. So where the diagnosis is in doubt it may be wise to give the patient the opportunity to choose between pain and anesthesia during the period of nerve regeneration.

The injection into the second division is made either above the zygomatic arch into the sphenopalatine fossa to reach the nerve as it emerges from the foramen rotundum, or from inside the mouth, according to nerve block methods familiar to oral surgeons.

The third division is reached as it emerges from the foramen ovale either by a lateral approach transversing the temporal fossa above the zygoma, or from an ante-

rior approach, the needle closely hugging the lateral aspect of the maxilla just above the alveolar process.

These peripheral injections in skilled hands are relatively free from danger, even though tragic injury to eustachian tube and optic nerve has been reported. The writer wishes to warn against any attempt to introduce the needle into the foramen ovale and to inject the ganglion itself. Successful alcoholic injections of the ganglion afford permanent relief, but are accompanied by such risk to the central nervous system and to adjacent structures that they are not to be considered.

Peripheral neurectomy is now confined to the supraorbital nerve. The scar of the incision is in the line of the eyebrow and is soon covered; the nerve is easily exposed, and complete resection of its trunk accomplished. Pain in the infraorbital nerve is controlled by alcoholic injection of its foramen, while the inferior dental is injected peripherally through the mental foramen or as it enters the inferior dental foramen on the buccal surface of the ramus of the mandible. These injections have the advantage of being relatively easy and safe; they afford great relief, and they give the patient choice of anesthesia or pain. Sensation returns in from three months to several years, and along with it pain. Subsequent injections are usually less satisfactory and afford shorter relief.

The modern radical operation for tic douloureux is a therapeutic triumph and illustrates the mastery of physiology, anatomy, and of surgical technic, which alone has made intracranial surgery possible. Removal of the ganglion was first proposed by J. Ewing Mears in 1884, and was first successfully accomplished by E. Rose six years later. Operations upon the ganglion, and upon its second and third divisions distal to the ganglion, were done until Spiller in 1899 made the brilliant suggestion that permanent relief would be afforded by section of the sensory root proximal to the ganglion. Frazier was the first to seize upon this suggestion and to utilize the physiologic fact that sensory nerve fibres cut between the ganglion and the brain would never regenerate, and it was he who was first to cut the sensory root of the ganglion. To him is due the credit for the sav-

ing of the motor root, and the partial section of the sensory root which now makes possible a selective anesthesia. In other words, it is now possible to divide only those fibres of the nerve which transmit pain stimuli, and to cause the minimum of cutaneous anesthesia. Fortunately, the first division is seldom involved and it is now no longer necessary to cause anesthesia of the cornea, with the large incidence of corneal ulcers following therefrom.

For the radical operation, the patient is anesthetized with avertin or other basal anesthesia, reinforced by local infiltration. With the patient in either the sitting position or lying upon the table, as the surgeon is accustomed to operate, the squamous portion of the temporal bone is exposed by either a semi-lunar incision or by a vertical, muscle-splitting one as in a Cushing subtemporal decompression. The bone is rongueured away until the base of the middle fossa is exposed. The groove made by the middle meningeal artery is found and followed to the foramen spinosum. The artery is controlled by plugging this foramen with cotton. The artery is divided; ligation of its distal end is not necessary. Electrically lighted retractors and suction afford good exposure. The third division as it enters the foramen ovale is identified and its fibres followed back into the ganglion. The double sheath of dura is split, the ganglion uncovered, and the sensory root laid bare. As this is done, a gush of cerebrospinal fluid is seen. This reduces pressure and venous oozing becomes less troublesome. Frazier has shown that it is not only possible to lift the sensory bundle from the underlying motor root, but that it is also possible to identify the fibres from the first, the second, and the third divisions in the sensory trunk itself. Those from the first division lie highest and medialward; those from the third division lowest and lateralward; while those from the second division lie in between. It is entirely possible with accurate exposure to divide the fibres desired and to conserve not only the whole function of the motor root, which supplies the muscles of mastication, but also to preserve sensation in those parts of the face which have been free from pain. Closure is without drain-

age, and convalescence has been without untoward symptom.

The author has performed the radical operation in Birmingham twenty-nine times. There have been no deaths. All patients have been cured permanently, and one temporary facial palsy is the only unsatisfactory result of the operation. The cases have been carefully selected and in all instances the patients have accepted the permanent anesthesia gladly. Peripheral alcohol injections and occasional neurectomies have afforded temporary relief to numerous patients with minor neuralgias, or to those with the major type unwilling to undergo the radical operation.

Medical Arts Building.

THE INCREASING MORTALITY FROM APPENDICITIS*

J. OTIS LISENBY, B. S., M. D.

Atmore

There has been recorded during the past ten years an unusual chapter in the history of surgery in that appendicitis is the only disease which has ever shown an increasing mortality after the diagnosis had been made comparatively simple by Medicine and a specific treatment developed by Surgery.

Since the diagnosis of appendicitis is regarded as comparatively simple and the treatment as certain to effect a cure, with an almost negligible mortality when compared to other diseases which are amenable to surgical treatment, where are we to search for the cause of this increasing mortality, which everyone admits is the case today? With this question in my mind, I have tabulated the causes of death in my practice, both immediate and remote, for the last four years and have found the causes to be, in order of frequency, as follows:

- (1) A large percentage of people believe that appendicitis is a disease which may be operated on at a time to be elected by themselves, as in chronic tonsillitis, chronic salpingitis, etc.;
- (2) Procrastination by the patient or the family in failing to call a physician;

*Read before the Association in annual session, Mobile, April 19, 1932.

- (3) Procrastination by physicians;
- (4) The administration of purgatives by the family before calling a physician;
- (5) Errors in diagnosis;
- (6) Physicians do not always accompany their patients to the operating table after they have referred them for surgery and, hence, do not appreciate the rapidity with which the condition progresses at times.

The above causes account for failures to secure immediate operation, all of which are traceable, either directly or indirectly, to the medical profession. Mistaken ideas held by laymen have originated from the fact that at times physicians have advised or allowed patients to wait through either mild or severe successive attacks. Such advice makes it more difficult for physicians who may be called during future attacks, to secure permission for immediate necessary operations. For every individual in each locality who succeeds in weathering several attacks of appendicitis over a period of years, there are always several patients in the immediate locality who experience ruptured appendices with subsequent high mortality. The reason is that these individuals were of the opinion they did not have to have an operation since others had lived through several attacks. Anyone with an acute attack of appendicitis, who delays operation, may be compared to a man who, upon seeing the roof of his home ablaze, delays an attempt to extinguish the flames but waits to see if the fire will not die of its own accord.

There is another important cause of mortality. Of this, the seriousness of the practice of administering a drastic purgative before operation, I need say but little. It is a well known fact that nine out of every ten patients who die from appendicitis have been accorded such treatment.

In considering the question of diagnosis I shall not attempt to deal with the problem from the standpoint of the experienced surgeon but shall endeavor to lay down a few simple rules which, if followed, may aid a family physician in arriving at one of two conclusions when a case of abdominal pain is under consideration. The two conclusions are: (1) That the patient has a definite attack of appendicitis; or (2) that the condition is unusual or atypical and

assistance is needed in arriving at a diagnosis and in the institution of surgical measures.

Hence, I shall not go into a differential diagnosis of all the unusual or rare conditions which may be met with in the abdomen and which a surgeon must take into account before arriving at a definite diagnosis. I shall consider only appendicitis, genito-urinary conditions and pelvic pathology—including inflammation and tumors of the ovary, salpingitis and tubal pregnancy.

The typical attack of appendicitis begins with pain in the epigastrium which may or may not be accompanied by nausea or vomiting, singly or together. From a few hours to a day or so later the seat of the original pain may shift to the right iliac region when the pain may become so severe that a physician is called. Occasionally the original pain in the epigastrium may occasion such discomfort that the physician is called before localization has definitely occurred. The tenderness may then be found over the region of the appendix while the patient may not have realized that there was any tenderness or pain in any other location than the epigastrium. Now it will be found that pressure applied slowly but firmly over the epigastrium will not occasion increasing pain in the epigastrium; whereas, slowly applied pressure over the appendix meets with increasing rigidity and produces greater pain than superficial palpation. The temperature will be found to be increased not over two degrees, with an average of about one degree and often only an elevation of a fraction of a degree. Depending on the location of the tip of the appendix, the tenderness may be more severe inferiorly, laterally, mesially or upward from the base of the appendix. Often pressure over the appendix produces pain in the umbilicus or in the epigastric region. When the physician sees the case several hours or days after the beginning of the attack or during a successive attack, he must remember that a thorough history may be more valuable at times than the physical examination. The history must be taken in absolute chronologic order, taking into account each new symptom whether it be only those symptoms elicited during the immediate attack or the question

of indigestion or constipation between attacks. One must not be satisfied with the statement of the patient or the family that there has not been a preceding attack for the symptoms during succeeding attacks are not always the same as in the original attack.

I believe that in at least ninety per cent of my cases I have formed a tentative diagnosis after completing the history, which diagnosis is only corroborated by the physical examination. The first symptom of an acute attack superimposed upon the so-called chronic appendix may be, and most often is, acute pain in the right iliac region which may or may not be accompanied by nausea or vomiting.

A history of previous "bilious attacks" in children, accompanied by nausea, vomiting and abdominal pain, is often most valuable when confronted with an attack of abdominal pain in a child.

It has been my experience that an attack of acute appendicitis secondary to a gastroenteritis produced by eating any form of fruit, such as strawberries or peaches, progresses more rapidly than the average attack. I have learned to advise immediate operation when this history is secured during the examination of a patient suffering from an attack of appendicitis.

Appendicitis may be differentiated from pelvic disease by the location of the pain, by the prodromal epigastric discomfort which is not often found in pelvic disease, and by the history of previous attacks or symptoms of earlier pelvic disease. A ruptured tubal pregnancy, at times, may be extremely difficult to differentiate from appendicitis but the sudden pain, shock and pallor should, in the majority of cases, exclude appendicitis. Rare cases will require consultation and at times laparotomy before the final diagnosis is definitely arrived at. Tumors of the ovary, unless strangulated, give a history of previous trouble not referred to the appendix; do not show the elevation of temperature found in appendicitis; and usually may be outlined by bimanual examination.

To my mind the differential diagnosis which requires the elimination or exclusion of genito-urinary conditions is the most difficult which the attending physician is called upon to make. Here the question of

deep palpation without increased tenderness or rigidity will most often aid materially in separating these conditions, while inflammatory conditions of the urinary tract commonly present considerably higher temperatures than do early attacks of appendicitis. The exclusion of strictures of the ureter with their attending symptoms must often be done by a urologist.

A patient suffering from acute appendicitis is unusual who is not more comfortable with the right knee flexed.

CONCLUSIONS

1. The public must be re-educated to the safety of early operation in acute appendicitis and to the gravity of delay.

2. Physicians can do much to lower the mortality of appendicitis by refusing to allow operation to be delayed.

3. Physicians, as well as the lay public, should not advise the indiscriminate use of purgatives in the presence of abdominal pain or discomfort.

4. Consultation with a competent surgeon should be asked for in all cases of unusual abdominal attacks where the diagnosis is not obvious.

DISCUSSION

Dr. W. R. Meeker (Mobile): I want first of all to commend Dr. Lisenby on the choice of his subject. After over forty years of acquaintanceship with appendicitis, as a separate clinical entity, the mortality still remains high. Its reduction is a problem not only for the surgeon but for the profession in general.

In the past few years attention has been directed away from the pathologic basis of surgery; many clinical centers are now giving prominence to physiologic surgery, that is, surgery for the correction of function. I refer more particularly to the various sympathectomies, denervation of the kidneys, adrenals, bladder, etc., in which the operative indications are rather obscure and the patient oftentimes rather hard to convince of any resulting improvement. But in appendectomy the operation has for its object the extirpation of diseased tissue, which is surgery at its best. Through a definite concise piece of work the patient passes from the condition of an acute emergency to one of comfort and safety.

An important remedy of the high mortality, as suggested by Dr. Lisenby, is the education of the public, a very difficult thing to accomplish. This has been realized by the American Association For The Control of Cancer in its campaign for publicity. Very appropriate pamphlets on various phases of cancer, for example, "What Every Woman Should Know About the Breasts", were distributed to the laity by this organization. But it was

soon found out that what every woman didn't know about the breasts, many doctors also didn't know,—so that other pamphlets were issued to the profession.

The same thing holds true with regard to appendicitis. Education both of the profession and public is needed. Motion picture films for small projectors are now rented by the Eastman Kodak Co., and are intended for the public. These films are both entertaining and instructive and good use may be made of them at medical meetings as well as at civic clubs, schools and churches.

It has been pointed out that errors in diagnosis cause dangerous delays in operation. I was interested in a statement of one of the essayists that he had been surprised many times, in performing laparotomy in the presence of mild and indefinite symptoms, to find an advanced gangrenous appendix present. I have also been surprised a good many times the other way,—performing laparotomy with a positive preoperative diagnosis of acute appendicitis and finding a normal appendix. However, I experience no twinge of conscience in such cases, as I would rather remove several normal appendices than to delay one operation until rupture had occurred with probable impending death.

In regard to diagnosis, the teaching of Dr. John B. Murphy still holds good. He summarized the findings in the sentence, "Pat Norton Follows Many Lawyers' Cases". The first letter of each word in this sentence is the first letter of a cardinal symptom or finding. "P" is for pain; "N" for nausea and vomiting; "F" for fever; "M" for muscular rigidity and tenderness; "L" for leucocytosis; and "C" for constipation. Of all these features probably muscular rigidity and appendiceal tenderness are most important, and of themselves may justify operation.

Finally, let me plead for early operation even in the presence of suspected appendicitis. Let us not delay operation until all diagnostic features are 100% present for well developed appendicitis. If you wait until the diagnosis of cancer is 100 per cent, and everybody concerned is thoroughly convinced of its presence, you are likely to be too late. The same holds true for successful surgery in appendicitis. If we are to be so painstakingly accurate in our diagnoses as to delay until all criteria are present 100 per cent, we are only making our appendicitis tend toward the fatal type, and bringing surgical treatment into disrepute.

Dr. R. S. Hill (Montgomery): Just a few words with reference to the diagnosis of acute appendicitis. I do not believe that we should delay to be one hundred per cent perfect in our diagnosis of any acute abdominal condition. Delay for accuracy in diagnosis of acute abdominal conditions will not infrequently result in the loss to the patient of the chance to be cured. Haven't all of you heard the expression, "waited too long to be operated on"? If we can reach a diagnosis that we have a surgical condition of the abdomen requiring operation and not a medical condition, then we should not delay for the sake of accuracy in diagnosis. Enter the abdominal cavity prepared to do what is necessary.

Now, there is just one point I wish to emphasize in examining for appendicitis. Never allow your

patient to know what you suspect he or she has. Begin to examine on the other side of the abdomen and gradually work around to McBurney's point, and if you find soreness there, and rigidity, then, in all probability, you have appendicitis. Put your patient on the defensive. Ask your patients if they are truthful, and they will tell you, yes. All right, if you are truthful, you have appendicitis, and if you are not truthful and have represented you are sore when you are not sore, you haven't appendicitis. Put them on the defensive. Don't get on the defensive yourself.

I had rather take out a few appendices unnecessarily than run the risk caused by delay of having a ruptured appendix with the increased danger to the patient's life.

Now, I do not believe it is always easy to make a diagnosis of appendicitis. Last December, at White Sulphur Springs, in discussing this subject, I heard Dr. Finney of Baltimore relate in his inimitable style an experience he had. He was called to Pennsylvania to operate for appendicitis. He was not quite certain about the condition but he operated and took the appendix out. When he got through, he said to the family physician, "Doctor, when you find out, if you ever find out, what is the matter with that patient, will you please send me a wire at my expense?" The next morning he got the wire,—"measles". So, he is called to another case and remembering the experience he had recently, he asked if there was any measles in the neighborhood. He was advised there was. He says, "then we will wait until tomorrow." By the next day measles had broken out. The third case came along and he asked if there were any measles in the neighborhood. Oh, yes, there was a brother down with measles upstairs. "Well," he said, "we will wait until tomorrow." When tomorrow came he had a perforated gangrenous appendix.

Now, gentlemen, it is not always an easy thing to make an accurate diagnosis of an acute abdominal condition and the good surgeon will not wait to make a perfect diagnosis however desirable it may be, because when he delays in the interest of making an accurate diagnosis, he is delaying at the expense of his patient and may sacrifice to his patient the chance of getting well.

Dr. Alton Ochsner (New Orleans): Mr. Chairman, I think we are all very grateful to Dr. Lisenby for his splendid presentation.

I think one reason for the increase in the appendicitis mortality rate today is because in medical schools we are stressing the importance of preoperative diagnosis; we are stressing the importance of making a diagnosis on a group of symptoms and signs. I think, however, if we realize there are two different types of appendiceal lesions, for which knowledge we are indebted to Wilkie, we will not have so much trouble. Wilkie has demonstrated the difference between appendiceal obstructions and appendiceal infections—two different conditions.

In the appendiceal obstruction there is a cutting off of the blood supply because of obstruction of the lumen. It is this type of case that I think most physicians are apt to hesitate as regards making the diagnosis. It is in this particular type of

case, as Wilkie has shown, that there is an early gangrene of the appendix, due to the cutting off of the blood supply and a rupture of the appendix in contrast to the patient who has an appendiceal infection. In the latter type of patient we have the pain and the rigidity, and in addition we have leukocytosis and fever.

I agree with all the speakers that if there is any question of appendicitis, the appendix should be removed, especially in those cases in which there is no leukocytosis and no fever. An operation is more urgent for a patient who has colicky pains than for one who has an inflammatory process in the appendix.

As regards the other causes of an "acute abdomen", I think there is one condition we must not forget. I refer to the peptic ulcer in Meckel's diverticulum. We ordinarily think of the complication of Meckel's diverticulum as being that of inflammation. However, we know there occurs in Meckel's diverticulum an ulcer which is comparable to that which is found in the stomach and in the duodenum. It occurs at the junction between Meckel's diverticulum and the intestinal mucosa, so it is a true peptic ulcer. These children do develop ulcers, which perforate, and the possibility of a perforated ulcer in Meckel's diverticulum must be kept in mind in order that it will not be overlooked if no other cause for the peritonitis can be found at operation.

Dr. J. S. Turberville (Century, Fla.): I wish to congratulate the Doctor on the able way in which he has handled appendicitis from the standpoint of the man who does not operate. In fact, he has covered the subject so completely that he leaves very little to be added.

To his summary of the causes of high mortality in appendicitis I will add one other and that is the giving of narcotics before a diagnosis has been made.

I have a few figures regarding the location of the initial pain, based upon a study of 365 operative cases: epigastrium and umbilical region, considered together, 43%; general abdomen, 14%; lower abdomen, 5%; right abdomen, 35%; other locations, 3%. The epigastrium and other situations comprise 65% of the number that mention the pain in other situations than that of the right side. Therefore, it is necessary not to depend too much on the epigastric location. I shall watch with a good deal of interest the statement of the Doctor that, in the recurring and so-called chronic cases, the initial pain is often in the right iliac region. I had never observed this, however, my attention had never been called to it.

The general rule with regard to the temperature is correct, but often when the patient is first seen by the attendant there is high temperature without perforation or peritonitis. These cases come under the heading of those for whom the doctor advises surgical consultation. I have seen the temperature as high as 104 Fahrenheit. Of course, this is not an early temperature as sufficient time must have elapsed for the appendix to have become distended with pus.

I wish in this connection to stress the danger that he mentioned in the use of purgatives. In the study of the 365 cases mentioned above it was

revealed that patients found with perforations who had had purgatives went less than half the length of time than those who had not had purgatives.

When all other findings were doubtful or negative, I have often made a diagnosis of appendicitis by finding a definite circumscribed area of soreness in the region of the cecum.

Dr. Sidney Meeker (Memphis, Tennessee): There is one point in diagnosis that has not been mentioned, and that is deep pressure on the left hand side of the abdomen gives referred pain in the region of the appendix. I have found that out several times in making a differential diagnosis; and you find in, I think, seventy-five to ninety per cent of the cases that that is accurate. This is especially true in acute appendicitis.

Personally, I had my appendix taken out as a prophylactic measure after I had an infected right kidney. All foci of infection were removed. X-ray pictures showed my appendix was fixed apparently in the lower fossa, and it certainly did help my kidney to take the appendix out.

Dr. Lisenby (closing): This paper was written in an attempt to reawaken physicians to the necessity of educating the public as to what to do and more especially as to what not to do in handling acute abdominal conditions. That is the reason I have not attempted to enumerate all of the points of interest in the pathology or diagnosis of appendicitis. Next, I do not feel that any one who is not thoroughly familiar with the anatomy, physiology and pathology of the condition would be able to derive a great deal of knowledge from listening to someone read a paper relating all the different symptoms and findings that have been written to date on the subject. As Dr. Hill says, however, it is a question of determining whether or not the patient has an acute abdomen and immediately instituting the indicated treatment. Another point, mentioned by Dr. Meeker, is the fact that at times we have all removed appendices which did not show grossly disease proportionate to the symptoms or findings seen before the operation but we must remember that there is a not insignificant percentage of cases of acute appendicitis which will be diagnosed microscopically only and which do not always show macroscopically.

I wish to thank the gentlemen who have so kindly and ably discussed this paper and hope that it will be the means of bringing a certain percentage of those patients who have been allowed to delay operation too long, to operation sufficiently early to materially lessen the mortality which exists at present.

Vitamin and Mineral Content of Dried Vegetables.—The Committee on Foods of the American Medical Association reports that to be acceptable, dried vegetables, either powdered or in other form, shall retain in highest degree possible with effective manufacturing methods, the vitamin and mineral content of the raw vegetables. Products with materially reduced vitamin or mineral content may be accepted provided they are accompanied by labels and advertising prominently and appropriately declaring the vitamin or mineral content with respect to that of the natural vegetable used.

THE NUTRITIONAL PROBLEM OF
THE SCHOOL CHILD IN RELATION
TO TUBERCULOSIS*L. W. ROE, M. D.
Mobile

School authorities have long recognized the first essential in education—health. In the late nineties the first systematic health program in the public schools had its beginning. No doubt this beginning was prompted by the need of protection of schools against infectious diseases. Today, in contrast, there is to be found in most well organized school systems a health unit whose duties embody the supervision of all elements entering into the healthy growth and development of the school child, and whose interest is particularly keen in guarding against tuberculosis.

Statistical reports by school and health agencies, in this country and abroad, on the frequency of tuberculin reactions in school children are very informative, and should awaken a wide and aggressive interest in health problems of the child. Perhaps one of the most extensive and comprehensive surveys of this character in this country was by Chadwick and his coworkers in their Framingham study of 26,000 children of school age. The result of this survey brought to light a wealth of information heretofore unfolded concerning tuberculosis in the school child. This original work has inspired many investigators in this country and elsewhere to make similar surveys, which have dealt with both the rural and urban school child.

Korns and Rathbun, each working in separate New York rural counties, have recently contributed valuable information by their survey of school children living in rural districts. Korns, in his report on the survey of 1,087 apparently healthy children of all ages, found reactions to intracutaneous tuberculin tests in the strictly rural sections of 7.6%, and in villages of 21.1%. Rathbun, in his x-ray studies of 3,678 school children of rural, village, and town residence, found that 3.3% had tuberculosis of the tracheobronchial lymph nodes. He notes that often these types develop pulmonary tuberculosis, and therefore require

protective guardianship. The increasing incidence of tuberculin reactions in children of rural, village, town, and closely congested cities merits attention.

In the survey by the Henry Phipps Institute of 4,107 school children in the city of Philadelphia, which represents a good cross section of the various social units of the city, there are to be found also very interesting facts—the ever increasing ratio of reactors from age 5 of 37.7% to the 18 age group of 90%, with an average of 73.5% tuberculin reactors. There is shown by this report that the percentage of reactors in girls is larger than in boys (girls 75.1%—boys 72%). This is explained on the ground of the more confining home life of girls. Elaboration of other phases of this study of tuberculin reactions is to be found in the review of records reported from widely scattered areas in this country, Canada, and abroad. However, these records, in the main, are in corroboration of those here recited. One thing outstanding in all reports is the marked increase in later life of the ratio of active tuberculosis among the contact children in contrast with those not so designated. With this last fact so forcibly brought out, the interest of every physician should be awakened in the fulfillment of a trust in piloting the youthful charges under his care through their growing years, and give them a heritage of physical fitness—an insurance against so serious a malady as tuberculosis.

These various reports, as gathered from all sections, recite that the average school child, in the main, by the time he reaches 18 has had a body conflict with tuberculosis. He is therefore termed a latent or childhood type of tuberculosis; that is, he has or has had a tuberculous infection of the tracheobronchial lymph glands or hylus. This child is then always potentially tuberculous, and all that is needed for the beginning of an active tuberculosis elsewhere is the disruption of his self-created immunity, in which malnutrition plays no small part.

In this connection I wish to call your attention to the status of the school child in Alabama, and enlist your more serious interest in his physical development and future. I take it that it is not the sole duty of the physician to minister to the child

*Read before the Association in annual session, Mobile, April 21, 1932.

when illness overtakes him. It is his obligation, as the family physician, through wise counsel to the parents, broaden their knowledge of child development and care, even injecting himself into the child's life, thereby fulfilling more easily and fully this objective. So much do I realize that this responsibility is ours that I feel we should be able to justify both to ourselves and the community the reason for the physical inferiority of any child under our care.

My association with the tuberculous in Mobile County over a period of twelve years and, in more recent times, the opportunity for the physical survey of the school children of this county have convinced me that much can be done in elevating the physical standards of our growing youth, minimizing in so doing the frequency of active tuberculosis. This can be accomplished through organization and without material augmenting of the funds now available. It is the educator's obligation to hand down to posterity an enlightened citizenship. It is our duty to perpetuate a virile people.

The State Board of Health of Alabama only in recent years has developed an organized program, in fighting tuberculosis, which program has for its end wise hospitalization, and investigative field and educational agencies, etc. Perhaps this late beginning may prove beneficial to the State both financially and otherwise, because of the changing opinions on tuberculosis control and the varying thought in regard to hospitalization. The present mobile tuberculosis unit of the State Board of Health working afield is a very progressive step in this organized program. Through its activity, which is proving of great value, it has awakened the physician to a greater interest in tuberculosis, inspiring him to the necessity of whetting his diagnostic acumen in the early recognition of the disease, and to the need for a more intimate knowledge of its varied behaviour and care. The educational program promulgated from its clinic, as a background, to the schools, parent-teacher associations, civic organizations, and women's clubs, disseminating information in regard to the protection against and care of tuberculosis, is a project which must first be effected for success. The greatest success will come when the public generally is well informed of

this disease. The procuring of information from the several sections of the State concerning the incidence of tuberculosis among the various social groups will prove valuable in broadening this program, and with this information at hand will provide a more impressive educational force. Of necessity the local physician must be an integral unit in this work.

There has been no general survey of the school children of Mobile County for tuberculin reactors. In the chest clinic, where the intracutaneous tests are practiced, the greater proportion of the children presented have been contacts in which the percentage of reactors has been high. However, in those children presented with no history of contact the percentage of reactors has been strikingly small. We, therefore, have no criterion as a guide except the death rate from tuberculosis, which conforms generally to that of other states, and, therefore, the incidence of tuberculin reactors in Alabama must parallel the findings of other states. Be that as it may, the fact remains that with the undernourished child we have in each a potential possibility of tuberculosis. How definite this potentiality is in our State may be gleaned from the records of the physical examination of 2,748 children in 7 Mobile City Schools, with defects noted in 1,809 children or 65.4%, 830 or 33.9% classed as anemia, undernourishment, and malnutrition, with a total of 3,225 defects noted. While these figures are impressive, they are by no means so convincing as to the one who participates in their making.

From the records of the chest clinic in Mobile we find that malnutrition is noted on most of them. The causes of undernourishment have been stated to be:

- (1) Physical defects
- (2) Fatigue
- (3) Poor home conditions
- (4) Poor or insufficient food

For Alabama we must consider hookworm infestation and malaria as well.

In the various schools surveyed for tuberculosis, mention is made that the tests were on children "apparently well", and it is from this type of child that records were compiled. It has been observed, as well, that very frequently children with open tuberculosis will show no outward signs of

infection, such as, cough, loss of weight, anemia, etc. The many elements, therefore, causing undernourishment of the school child and the strange behaviour of tuberculosis among them should be a matter of material interest.

Primarily, school and health authorities should hold the undernourished child as their special charge. Health agencies must become more alert in their inspection, which carries with it sufficient health personnel to efficiently carry forward the proper program for physical development. This of course originates in the school, but it must be carried into the home by the nursing corps, professionally equipped to impart information in the preparation and choice of food, food values, and a balanced ration. The nurse must be sufficiently capable, as well, as to be able to actually enter into the preparation of a meal, and advise in the creation of the best hygienic surroundings possible. The problem of malnutrition originates both in the home of the poor and the affluent. From the table of the poor we learn the tragic story resulting from insufficient and poor food, and its unintelligent preparation; and from those living in affluence we find oftentimes a greater tragedy incident to indulgences, and the failure to exact the partaking of a proper ration, together with the stress of social life.

With the adoption of this plan for the relief of the undernourished in the school, it is obligatory that the cafeteria be maintained in the highest degree of efficiency because this is fundamental, and can be a distinct object lesson. This efficiency carries with it the choice and preparation of food, consideration of its nutritional and assimilable value, and the manner of its presentation. It is very necessary that supervision of the choice of food be given the child, otherwise Young America will make his own choice—a candy puff. It is obvious that the supervision of the cafeterias of the various counties should be under the care of trained workers. Those in authority should recognize this necessity and make provision for it. It is pleasing to note that the State colleges are training young women for just such purposes. The average child nowadays has one meal from the cafeteria each school day. How valuable, then,

would be the precept in nutrition and health under a system so organized. It would materially alter the problem of malnutrition and safeguard the more against tuberculosis.

It may be that we are all wrong in our approach to the prevention of tuberculosis. Perhaps it might be wiser, as a preventive measure, to begin early in life an education of the young in health consciousness and nutritional needs. Such a program effectively carried forward would at least be a meritorious experiment, having the definite reward of social and economic gain.

IMPORTANCE OF POSTNATAL CARE*

K. B. WILLIAMS, M. D.
Hartford

No branch of medicine is fraught with greater dangers than obstetrics; and, to the conscientious physician, none may cause more anxiety. Eclamptic convulsions, placenta praevia, the fear of hemorrhage, pelvic abnormalities, difficult presentations, and abnormal babies from syphilitic mothers are some of the apparently insurmountable obstacles that confront the obstetrician. These dangers become more alarming to the general practitioner who, without competent help, must attend to every detail of the preparation of himself, his equipment, and the patient for what may become a major surgical operation on a woman who resides in an extremely rural community and it not quickly accessible to hospital advantages.

The physician's service should begin early in pregnancy and the patient should be under his observation until parturition begins. Much has been done lately, mainly through the health units of the various counties, toward educating the pregnant woman in the need of prenatal care by her physician. However, many still do not avail themselves of this service because of the lack of knowledge of its importance and because of the additional expense incurred. Striking evidence of its consequence has been produced among the more intelligent and financially able clientele. In those cases which receive proper attention dur-

*Read before the Association in annual session, Mobile, April 21, 1932.

ing pregnancy, eclampsia becomes almost absent; placenta praevia is discovered in time to save many expectant mothers from fatal hemorrhage; abortions are frequently averted; positive Wassermanns found and healthy babies delivered from syphilitic mothers; and casualties from pelvic abnormalities and difficult presentations greatly reduced by an early cesarean section or by the early performance of some other necessary operation. When and where it can be done properly, I think cesarean section should supplant every other measure that might mean destruction to the child or that might lead to great danger of maternal death.

While prenatal care of the pregnant woman should be emphasized, and, though it be necessary in avoiding immediate dangers both to the expectant mother and the unborn child, postnatal attention is equally essential to the mother if future gynecologic service is to be avoided or advised. Observation of the puerperal woman has not received enough regard or appreciation from the physician; nor has the patient been sufficiently informed of its possibilities for conserving her future health. She should be impressed with the need of this service through the period of uterine involution and later, if necessary, that much might be done to prevent subsequent pathology or that she might be advised of existing conditions which require surgical treatment.

The frequency of pelvic pathology in parous women deserves more consideration. There should be no latent period in our attention to a patient between the end of obstetric care and the beginning of gynecologic observation. In any woman who has borne a child there is some relaxation of the abdominal walls and the perineal structures, and frequently, one or more tears of the cervix that may produce pelvic complications which terminate in some serious trouble. Many of the minor lesions may be treated and remedied by simple office procedures before symptoms occur. The majority of these wounds may require only cauterization or local therapy. Only the deeper tears will need surgical treatment. Some physicians advocate that all needed repairs be made at the time of delivery. The perineal lacerations may be

and should be immediately sutured, and frequently a good union results when followed up with proper attention through the puerperium; but, by the performance of a trachelorrhaphy more harm may be done by manipulation at this time than by waiting for the spontaneous healing that usually occurs unless the tear is too deep.

The trauma to the uterus right after delivery is magnified, and, when the marked edema has subsided, many exaggerated cervical lacerations will show remarkable healing after the involution period. Any damage to the cervix should be repaired unless healing does occur; because the proper operation is necessary for permanent relief from a torn cervix. Many who do obstetrics have not the surgical skill to correctly do this work after delivery; but, by watching the postnatal patient, they may advise the necessary early surgical measures and avoid more extensive disease.

Regardless of the injury done at delivery, whether it be a small nick in the cervix that may heal of itself or an extensive laceration that may need suturation, these lesions should be watched until the abrasions are healed or until the deeper tears have been repaired by a subsequent operation. When neglected, the remote results of these wounds are uterine subinvolution, chronic endometritis, displacements, and other diseases of the uterus and its adnexa. Cancer of the cervix in parous women is much more frequent than in women who have not borne children. The significance of early treatment may be appreciated when considering the dangers of carcinoma of the cervix resulting from neglected birth trauma in repeated pregnancies. Only few malignancies have occurred where early treatment or repair has been done.

Though these are good reasons for urging postnatal care, it is difficult to make these patients realize the importance of this service; and in many cases the care of the physician ceases with the delivery of the child. Seldom has the patient sufficient evidence to show the value of such service. Surgical measures carried out at this time might be conservative compared to the more extensive operations later required. The common complaints of headache, backache, dizziness, and weakness might be re-

lieved in their incipiency, and the development of neurasthenia and chronic invalidism in so many parous women avoided.

DISCUSSION

Dr. W. M. Salter (Anniston): Dr. Williams has given us a most practical and timely paper. Prenatal care should begin at the beginning of pregnancy. How long postnatal care should continue it would be hard to say, but if I were going to put a time limit, I would say two months, because some of these cases really need postnatal care for two months.

I am quite sure that a great many cases of vaginitis, and ulcers and erosions of the cervix, could be prevented or made very mild if postnatal care should continue for sometime after delivery. We know that ulcers of the cervix and erosions and hemorrhoids are foci of infection. Just recently Dr. Hirschman had a paper in the *Journal of the American Medical Association* in which he reported cases showing that inflamed hemorrhoids are foci of infection. He reported cases of neuralgia and other conditions that were absolutely relieved after these conditions were cured.

I think we should really stress the importance of postnatal care to the patients who come under our care as physicians and make them understand that the mother should be as near normal as possible. A mother comes to you in about four weeks and says, "I have backache, I have leukorrhea with a little bloody discharge"—that mother should be examined thoroughly; the cervix exposed by a speculum, and if there is an ulcer, it should be treated. I have in mind a patient with a baby about six weeks old. She had backache, extreme pain, and I found she had an ulcer of the cervix. The proper treatment and cure of this relieved the backache.

I want to again thank Dr. Williams for bringing so important a paper to this meeting. We should really take his advice and continue the postnatal care until the mother is normal.

Dr. Henry Green (Dothan): I am exceedingly proud of the paper that Dr. Williams has presented, he being a near neighbor of mine. I think it is one of the most valuable papers I have heard since I have been here.

Now, as to the matter of postnatal care, it is very hard, as Dr. Salter has said, to prescribe any definite time as an end to postnatal care.

I also want to mention a factor that hasn't been mentioned in regard to postnatal care, and that is the average woman who is confined at home or at the hospital gets up in about from eight to fourteen days and goes to working twelve hours a day, —something she is really not able to do when she is completely at herself, which she is not, as every one of us knows, in that period of time, especially if the labor has been a prolonged or hard one.

Then, I think there is another factor that has not been mentioned. Most doctors, I find, put a woman to bed and keep her ten days flat of her back, insisting on her staying flat of her back. I do not think that this is good practice. The uterus is heavy, tends to stretch the ligaments and sinks backward, perhaps to a sufficient extent that

it continues to be tilted backward when she re-assumes the upright position. I think a woman who is at all able to do it should be taught to change her position in bed frequently and to lie on her stomach as early as she can.

I want to present these little thoughts in connection with congratulating Dr. Williams for the very excellent paper he has presented.

Dr. Williams (closing): I wish to thank Dr. Salter and Dr. Green for the additional suggestions they have made to my paper. I wish also to emphasize Dr. Green's suggestion about the exercise a woman should have after labor. I agree that it is not necessary to keep a woman lying flat of her back for eight or ten days. I usually tell my patients that they may roll about in the bed in any way they may wish after an hour or so, and may sit up and take mild exercise in the room after ten or fifteen days. I also advise them to come to my office after about six weeks for a postnatal examination.

As Dr. Salter and Dr. Green have said, it is difficult to tell just how long this postnatal care should be kept up, but, as brought out in my paper, it should be done until all abnormalities have been cleared up,—either cleared up within themselves, or have been eliminated by some treatment or operation.

While I make this statement that it SHOULD be done, it is very true that in all cases it cannot be done. A very small percentage of patients will return to your office for this postnatal examination, that you may keep up the service until they are cured. Therefore, many go uncured, not because of the physician's neglect, but either because of lack of knowledge on the part of the patient of the importance of such postnatal examination, or because of lack of remuneration for the physician.

Again I wish to thank both physicians for their discussion.

PLACENTA PRAEVIA*

GERALD G. WOODRUFF, M. D.
Anniston

Placenta praevia is the implantation of the placenta, in whole or part, in the lower uterine segment—the zone of dilatation of the uterus. This zone may be roughly bounded by a circle, with the internal os as a centre and a radius of three inches measured from the external os, and constitutes the "dangerous zone" of Barnes, with reference to the site of the placental attachment.

The fact that the placenta may be found over the os was known in the time of Hippocrates. Mention was made of this by Mauriceau, Pugh, and others, all of whom

*Read before the Association in annual session, Mobile, April 21, 1932.

believed that the placenta had prolapsed from a normal insertion. Portal, in the latter part of the seventeenth century, stated definitely that the placenta may be implanted over the os, and described the condition from an anatomic and clinical viewpoint. This was stressed by other writers about the same time. Schacher, in 1709, was the first to demonstrate the fact at postmortem. Rigby, in 1775, pointed out clearly that placenta praevia was a condition of pregnancy caused by the low implantation of the placenta, and differentiated it from abruptio placentae. The former condition he called "unavoidable hemorrhage"—because the placenta must be separated by the advancing head of the child—in contrast to the term "accidental hemorrhage" given to abruptio placentae.

There are three types of placenta praevia, dependent on the relation of the attachment to the internal os, namely: placenta praevia centralis, lateralis or partialis, and marginalis. In placenta praevia centralis, the internal os is completely covered by the placenta and the finger inserted into the os uteri feels placental tissue all around. In placenta praevia lateralis or partialis, the placental tissue covers only part of the internal os and there is a definite space between the edge of the placenta and the os. In placenta praevia marginalis, the lower edge of the placenta just reaches the internal os, but does not cover it at all. It must be borne in mind that these varieties are relative, and change during the dilatation of the cervix; for example, a placenta that seems to be a marginalis before dilatation may be a lateralis when the cervix is dilated; furthermore, a centralis in early labor may prove to be a marginalis when the cervix is open. DeLee suggests a fourth variety, placenta praevia cervicalis, which is similar to a lateralis except that, instead of the edge of the placenta partially closing the internal os, it is attached to the cervical canal on the side of the placental attachment.

A number of theories have been advanced as to the etiology of placenta praevia but two predisposing causes are definitely accepted, namely: chronic endometritis and multiple pregnancies, especially when the pregnancies come close to each other. These two predisposing factors add some light to

the theoretical causes of the condition; it is generally conceded that there is a primary low insertion of the ovum, as an active cause; that due to an endometritis or some probable change in the endometrium as a result of the multiple pregnancies, or to some defect in the ovum itself, the egg slips down into the lower segment instead of attaching itself higher up in the uterine cavity. Further, the theory of Hofmeier and Kaltenbach, that the placenta is developed in the decidua reflexa, and that the ovum splits the decidua in all directions in its growth, explains how the placenta could come to the internal os in a low-implanted ovum.

Statistics show that placenta praevia occurs ten times as often in multiparae as in primiparae, and that the tendency to the low insertion of the ovum is increased with multiparity, rapid succession of childbearing, age, twin pregnancies, and in cases of subinvolution of the uterus.

The one outstanding symptom of placenta praevia is hemorrhage occurring in the third trimester, more often in the eighth month. The hemorrhage may come without any warning—for instance, during the night while asleep—and is not, ordinarily, accompanied by any pain. The bleeding may be very slight at first, a mere spotting of the garments, or a few drops, becoming more severe with each succeeding hemorrhage, or may be so profuse as to be immediately fatal. As a rule, the initial bleeding may stop of its own accord, to occur later and more severe; but it may continue as a very slight bleeding, which gradually weakens the individual, making a severe hemorrhage all the more dangerous. There may also be a small seepage of bloody serum, which usually is indicative of a large clot forming in the lower uterine segment and vagina.

The hemorrhage in placenta praevia is due to four causes: the tearing away of the placenta from the uterine wall, causing bleeding from the maternal vessels; the tearing open of the intervillous spaces of the placenta, the opening up of the circular sinus of the placenta, and, occasionally from the foetal vessels. The bleeding from the placenta is due to the inability of the weakened wall of the lower uterine segment to contract and compress the vessels. In cases

of marginal placenta praevia the hemorrhage very seldom occurs until after labor has begun, and often not until after full dilatation; in such cases the hemorrhage is probably due to the tearing away of the placenta from the wall of the uterus and opening up the sinuses of the uterus. In the lateral type, the bleeding usually starts at the onset of labor, or before labor begins, and is due to a partial effacement tearing the placenta away before there is really any discomfort. In the central placenta praevia, the bleeding may occur at any time during the last trimester. There are other symptoms more or less inconstant, such as pain, unusual pressure, frequency of urination, marked leucorrhea, and an unusual carrying of the child. There is a history of threatened abortion in a number of cases of placenta praevia, and, no doubt, a proportion of abortions are due to this condition. On account of the adherence of the membranes around the os in the low insertion of the placenta, especially the marginal, as a result of endometritis, premature rupture of the bag of water is rather common, bringing about premature labor in a large percentage of these cases. The lower uterine segment is filled with the placenta in this condition, preventing the normal accommodation of the foetal head, and resulting in all forms of malpositions and malpresentations. Muller reports 272 transverse and 107 breech presentations in 1,148 cases. In addition to the dangers and complications that accompany the first and second stages of labor, the third stage is also likely to be complicated. The placenta is often difficult to express on account of the abnormal position, adhesions, and a large area of attachment, and profuse hemorrhage is likely to occur at this time. Further, the muscles of the lower uterine segment lack the tone to contract and compress the vessels.

The maxim of DeLee, that "a painless, causeless uterine hemorrhage in the third trimester of pregnancy is almost pathognomonic of placenta praevia," is enough on which to make a diagnosis. However, it is well to confirm this by a rectal or vaginal examination, feeling the placenta tissue over the internal os. There are some signs which might suggest a placenta praevia in the latter weeks of pregnancy and

before the actual hemorrhage. On external examination, there may be an abnormal lie of the foetus, or the head may be felt to be very high up or lying in one of the iliac fossae, or there may be an unusually loud souffle heard over the pubic region. The diagnostic points found in a vaginal examination may be as follows: difficulty in finding the presenting part, or inability to find it at all; inability to push the presenting part into the pelvis; the feeling of a soft, boggy mass filling part or all of the fornices; the sensation of a spongy mass between the examining finger and the foetal head. After a uterine hemorrhage, the matter of differential diagnosis is reduced to that of placenta praevia and abruptio placentae, as the other possible causes of hemorrhages can be easily ruled out. It is well, in this connection, to remember the importance of a thorough vaginal examination before diagnosis of abruptio placentae is made, as it may be difficult to reach the edge of the placenta in case the patient is straining. In order to secure thorough relaxation and dilatation, it is advisable to give an anesthetic, if necessary. A further word of warning in regard to the vaginal examination may not be amiss. There have been cases of severe hemorrhage following an internal examination and one should be prepared to meet this emergency before one starts the procedure. The only definite sign of a placenta praevia is feeling the placenta through the internal os; in addition, the bag of waters is loose and the head, as a rule, is not engaged. In the case of abruptio placentae, the placenta is not felt, the bag of waters is tense, and the head is easily felt; furthermore, the bleeding in accidental hemorrhage is steady and continuous. In combined external and concealed hemorrhage, there is presence of pain apart from uterine contractions, tenderness on palpation and increased tension of the uterus. The general condition of the patient is a strong point in making the differentiation.

Placenta praevia is a serious complication of pregnancy and, at best, the prognosis is grave. In this condition the life of the mother and that of the child are antagonistic; treatment to save the child is dangerous to the mother, and that to save the mother often leads to the death of the child.

Muller, before the advent of antisepsis and under expectant treatment, had a maternal mortality rate of about forty per cent and a foetal mortality rate of about sixty per cent. DeLee, in a collection of figures from a number of authors, covering something over two thousand cases, shows a maternal mortality rate of seven and seventenths per cent and a foetal mortality rate of sixty-one per cent. It is seen that asepsis and improved obstetric procedures have helped the mother, but there has been very little improvement in the mortality rate of the foetus. It must be borne in mind that a large per cent of foetal deaths are due to prematurity; consequently, there is little to hope for in the matter of improvement. The majority of maternal deaths in placenta praevia are due to hemorrhage, caused usually by the condition, but sometimes due to the hurried delivery and the resulting injury to the cervical tissues and to the lower uterine segment. There is a great likelihood of postpartum infection, as the low implantation of the placenta and the manipulations usually attendant at the time of delivery increase the danger of sepsis.

In the matter of treatment, it must be realized that placenta praevia is an obstetric emergency, or potentially so, and should be thus handled. With the possible exception of the slight marginal placenta praevia, to temporize is dangerous. In cases of this type, the patient should be in bed in a hospital, but if she will not consent to this immediate delivery should be brought about. It is important, when a diagnosis of placenta praevia is made, to get the patient to a hospital immediately as this condition should never be handled in the home. The object of any treatment is to control hemorrhage and to deliver the patient in the most conservative manner. The possible means of attaining this object are: (1) leaving alone; (2) rupturing the membranes; (3) Braxton-Hicks or podalic version; (4) insertion of a bag; (5) cesarean section. The factors to be considered in the method of choice are: (1) condition, age, and parity of the patient; (2) type of placenta praevia; (3) period of gestation and condition of the foetus; (4) degree of dilatation. If the patient is in good condition, most any of these methods can be used, but if she is in a serious condition from hem-

orrhage and shock, we must combat these two things as quickly and with as little danger to the individual as possible. In such a condition, puncturing the membranes, thus making it possible for the placenta to retract with the uterine wall and allowing the head to come down on the placenta, may control the hemorrhage. If such is the case, the shock is to be treated by the usual methods, including transfusion and saline and glucose intravenously. In the case of an elderly primipara, with very little chance of another pregnancy, it is important to use every effort to save the child. In such a case cesarean section would be the method of choice, provided every other condition was satisfactory. On the other hand, if the individual is a young primipara, or a multipara with other children, the life of the child would not be considered as much, and all attention would be paid to the mother. The same is true in case of a premature or dead foetus. The type of placenta praevia is a strong factor in deciding the method of delivery. In central placenta praevia, and to a less degree in partial, cesarean section is probably most indicated; particularly is this true in primiparae with no dilatation and a rigid cervix. However, in both of these types, when there is dilatation of the cervix with profuse bleeding, the Voorhees' bag or version and pulling down a leg is the method of choice. In these cases the value of the Voorhees', or similar, bag should be emphasized as a safe way to obtain dilatation and at the same time control the bleeding. After dilatation is secured, one can either wait on delivery, or better, do a version and extraction, remembering at all times to extract slowly in order not to cause serious lacerations of the cervix. In the marginal type of placenta praevia, rupture of the membranes will usually suffice to control the hemorrhage as the head will act as a tampon and the placenta will retract with the wall of the lower uterine segment. In case this does not control the hemorrhage the insertion of a bag is indicated.

Careful attention should be given to the conduct of the third stage of labor in these cases as it is important that no blood be lost that can possibly be conserved. If there is any bleeding at all following delivery, the operator should not wait but

should either express the placenta by Crede's method or remove it manually. In case the uterus does not contract normally and check the hemorrhage, it should be packed thoroughly with gauze, thereby compressing the flabby lower uterine segment. It is also important to inspect the cervix carefully for lacerations, as these cervixes bleed more readily than those in a higher implantation of the placenta. Every slight laceration showing a tendency to ooze should be sutured.

After completion of the third stage, the patient should be treated for shock, if there is any, and given both mental and physical rest. It is often necessary to treat the anemia resulting from the loss of blood. This is accomplished by the usual therapeutic measures.

CONCLUSION

Maternal mortality in placenta praevia can be lowered by early diagnosis and proper treatment. Careful antenatal attention is a great help to the early recognition of the condition. The selection of treatment is dependent to a certain degree on the skill of the obstetrician, as one may be more adept at performing versions while another may be more proficient in another method. The safest method, where indicated, for the average practitioner is probably the use of the dilating bag, and after dilatation, allowing nature to complete the delivery, if the condition of the patient will permit.

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NEXT MEETING OF THE ASSOCIATION
MONTGOMERY
APRIL 18-21, 1933

THE MANAGEMENT OF GLAUCOMA SIMPLEX*

S. KIRKPATRICK, M. D.
Selma

It is estimated that simple glaucoma is the cause of one-third of the blindness in adults. My records show that it is the greatest single cause of blindness in patients past middle age. The literature is voluminous, but very little accurate scientific knowledge has been advanced. You are familiar with it and I shall not take up your time discussing many mooted questions. It is not the purpose of this paper to go into an exhausted discussion of glaucoma; but rather to present for your consideration and criticism a procedure of management, which I have found relatively satisfactory over a period of fifteen years—after a previous experience of trial and error in the mystic maze of multiple types of operations and treatment without arriving at satisfactory results to myself or patient. I use the word *management* advisedly because it fits the situation better and is more comprehensive than the restricted term *treatment*; it is only by taking this type of patient over completely and keeping him under constant supervision throughout the remainder of his life, just as is done by the internist with diabetics, hypertension, and tuberculosis, that we can conserve his vision. Pathology, symptomatology and the technique of diagnosis are also familiar to every man present and I shall not take up your time with this. However, I wish to emphasize the importance of being constantly on the lookout for it in all patients of the presbyopic age, especially when these patients demand a frequent change of glasses. That ophthalmologist is very fortunate indeed who has not overlooked some of these cases and had his confrere pick them up later; having had this happen to me I have become, what you might call, glaucoma-minded.

Occurring as it does at a period of life when wear and tear, overwork, bad habits, exposure and anxiety have sapped the physiologic foundation of life, when infections have found entrance through the door-way of the epithelium, and when a variety of toxic and autotoxic influences have set up

*Read before the Association, in annual session, Mobile, April 21, 1932.

vascular and cardiovascular disease, associated with nephritis and high blood pressure, I am convinced that it has a constitutional background and that every patient should have a thorough physical examination. The physical findings, including the teeth, tonsils and paranasal sinuses, are carefully recorded with the result of our findings, after a careful examination of fundus, charting of fields, tonometric reading, and vision before and after correction.

This is also the cataract period of life. The pernicious custom, for which we are in a measure responsible, of telling cataract patients that nothing can be done for them until the cataract is ripe and the patient blind is one of the many causes of overlooked glaucoma. It would be a long step forward if the public could be educated to get their first presbyopic correction from an ophthalmologist. By so doing many incipient pathologic conditions would be detected and a habit formed that would probably keep them going to the oculist for subsequent examinations.

To be successful, the treatment of glaucoma must be instituted before the disease has made much progress and caused irreparable damage to the vital structures of the eye.

The patient with simple glaucoma should be in complete mental accord with the ophthalmologist who cares for him. The ophthalmic physician who accepts the case should have not only a sympathetic understanding but also the faculty of analyzing the little deviations from normal in his patient's condition. He should appreciate the fact that the patient has placed in his keeping his most valuable possession—his eyes. He must ever keep in mind that he, as a physician, must be a counselor, a physician and a friend; that the conservation of his patient's vision must be his first thought and that he must ever realize that an ounce of prevention is worth a pound of cure.

After the diagnosis has been definitely established, I have a heart-to-heart talk with the patient telling him that henceforth he must be under the constant supervision of a competent eye specialist; that without treatment blindness is inevitable; that the disease is always bilateral, although it has occurred in one eye only; that we will start the treatment with drops and a thorough cleaning up of all foci of infection and oth-

er pathologic conditions, in so far as they are amenable to correction. The patient is made to understand that no restoration of vision is expected; that our aim is to hold the vision as near what we find it as possible. I have him understand in the beginning that the eye drops are to be used continuously, without interruption for even one day, until changed or discontinued by me or some other oculist; that the drops frequently fail to arrest the progress of the condition and then we resort to surgery. I request these patients to let me see them at stated intervals. The length of time a patient is kept on miotics depends upon the results obtained by them. It is my conviction that all medical treatment of glaucoma simplex is supplemental to or in preparation for operation. It is almost criminal to prescribe a miotic and dismiss the patient with the instruction to come back if not improved. The patients in the humbler walks of life, especially the negro in whom glaucoma is very prevalent, are the ones who need these detailed instructions most. The patient is then given pilocarpine, with or without eserine, in varying strength and frequency, according to indication, referred to the dentist and internist for a clean up of all foci of infections, after which another careful examination is made and recorded. I should warn you that a flare-up is not unusual following a too rapid removal of septic foci. The patient is kept on this line of treatment, with frequent check ups on fields, vision and tension, until I am convinced that the disease is progressing; then I tell them emphatically that the surgical hour has arrived.

Before operating it is wise and protective to have a very frank talk with the patient, again explaining to him just what to expect and more especially what not to expect from the operation. It is my policy to tell the patient frankly that blindness is almost inevitable without surgery, although we may be able to postpone its coming for many years; that the best results from surgery are obtained by operating when the vision is at its best; that poor results come from the late operation, but that there is a probability of an immediate drop in the vision following the operation, but that this reduced vision should and probably will remain stationary throughout life; that there is always a certain operative mortality that

he must assume; that the very nature and delicacy of the operation make it impossible for the surgeon to guarantee his results; and that this is the course I would pursue with my own eyes or the eyes of those dear to me. I find that such an understanding with the patient will in all probability prevent a suit for malpractice or disappointment in the event of reduced vision or dazzling. A celebrated ophthalmic surgeon once said to me that he would not operate on a chronic glaucoma eye with a vision of 20/30 or 20/20 because an operation on an eye that is white with this much vision, followed by an operative mishap, would surely result in a malpractice suit in his city. It is a great pity that a conscientious doctor should be hampered in his service to mankind by this reprehensible practice that is on the increase.

Having decided to operate, which one of the numerous operative procedures should be used? This is to be determined by the surgeon and the individual case. As a rule, where there are so many operative procedures advised for a certain condition, there is no best and no one of them is entirely satisfactory. The surgeon should stick to that operation with which he is most familiar and most experienced. After trying practically all the various operations, I have definitely settled upon the classical Elliot's trephining. Statistics show that some form of fistulizing operation keeps the tension down better than other types. Wilmer, who has an opportunity to see many cases from all over the United States and foreign countries, told me in a personal interview last summer that the classical Elliot's trephining operation seemed to give the best results over a long period of time. I agree with Parson's summary of his feelings that "trephining is uncertain in its results and is liable to be complicated with serious damages both immediate and remote. Yet, in my opinion, it affords the best means on the whole yet devised for dealing with chronic glaucoma". Satisfactory results of any operation depend very largely upon the meticulous care with which attention is paid to the details of the technique. It is well to review the essential points of the operation which Col. Elliot recently emphasized as being important. A wide angle conjunctival flap as thick as possible not coming down quite to the limbus;

the cornea must be split and not incised. A 2-millimetre trephine must be used; 1 mm. on the cornea and 1 mm. on the sclera. The top of the instrument should be depressed toward the foot so that the corneal lip of the wound will be cut through first permitting the button to hinge on its scleral attachment. The iris usually presents at the same time. The button and iris are cut off with the scissors and no instruments are introduced into the eye. Should the iris not present it is not good practice to fish around into the wound for it as there is danger of injuring the lens; while a peripheral iridectomy is advisable, it is not absolutely essential for success. A classical Elliot operation calls for a peripheral iridectomy, but Dr. Wilmer advises that a complete iridectomy be performed as in after years there is frequently found an adhesion to the lens with pigmentation at the pupillary border in the other type, giving a fixed, immovable pupil that is not satisfactory. Dr. Green of San Francisco, on the contrary, urged the advantage of small and peripheral iridectomies. It is interesting to see how close are their percentages of successes. This phase of the subject was ably discussed by Dr. H. Dickson Bruns of New Orleans in the March number of the New Orleans Medical and Surgical Journal, and I advise you to read it if you have not already done so. The appearance of cataract is one of the commonest and most cruel disappointments to the patient and operator in these cases. It is well, therefore, to leave the eye in the best possible condition for a subsequent cataract extraction and this is best done by the complete iridectomy. Atropine should be instilled in the eye immediately after the operation and used boldly for the desired effect until the eye has completely healed. This prevents adhesions and postoperative complications. The timid use of atropine has been one of the causes of disappointment.

A firm, flat, filtrating angle is the ideal, but we cannot always obtain it. The cystoid type is usually caused by a flap that is too thin and a too circumscribed subconjunctival filtration area. The conjunctival wound should be tightly closed. Elliot advises a continuous suture. I have never seen nor had a postoperative infection though I realize its possibility.

SUMMARY

- 1st. A discussion of the different operative procedures and a review of the literature was not attempted. A simplified procedure of management or standardization was presented in an effort to establish a systematic routine in a condition about which there exists a diversity of opinion.
- 2nd. This standardized form of supervision and treatment is the one found most satisfactory in my experience, but I realize that there are many able men who hold somewhat opposite views.

THE BLOOD WASSERMANN*

W. E. WILSON, M. D.
Montgomery

This article is by no means an attempt to diminish the value of the blood Wassermann, or to invoke a restricted concept of its worth. Its prime purpose is to create a true concept of its value and of its limitations as an index to diagnosis in the various stages of syphilis. There is a great divergence of opinion among physicians as to the value to be placed upon the negative reaction. Too often the value of the test is over-estimated to the extent that physicians relinquish entirely their clinical judgment to the laboratory and accept without question the diagnosis thus made. It is true the positive Wassermann, particularly the 4-plus reaction, may be considered as conclusive evidence of syphilis. However, the negative Wassermann is of much less significance as a means of excluding the disease. With a thorough understanding of these factors, the blood Wassermann should be extended to the largest possible number of patients. It would seem that it should be considered as much a part of the general physical examination of the patient as a urinalysis, blood pressure reading, or auscultation of the heart and lungs.

Since the Wassermann reaction is an expression of the relation between syphilitic amboceptor, a substance which appears in the blood of the syphilitic, and an artificially prepared antigen, it may vary from complete hemolysis or negative to no hemolysis, which is expressed as 4-plus. The varying degrees of reaction from negative to 4-plus

*From the Division of Venereal Disease Control, Alabama State Health Department.

are dependent upon the amount of syphilitic amboceptor in the patient's blood. There are certain stages of the disease in which the amount of this substance in the blood is increased. Therefore, the chances of obtaining a positive reaction are increased during certain stages of the disease. Positive results will be obtained in practically 100% of cases during the secondary stage, or from about the 3rd week to 6th month after the appearance of the chancre. From this pinnacle of efficiency, the percentage of positive reactions gradually declines, until in late uncomplicated syphilis it can hardly be considered over 70% efficient as a diagnostic criterion.

The following estimates by Wahl and DesBrisary give the percentage of positive reactions which have been found in the different stages of syphilis:

	Per Cent
General Paralysis	95+
Tabes Dorsalis	70
Cerebrospinal Syphilis (Exclusive of Paralysis) ...	45
Cardiovascular	85
Osseous	84
Cutaneous	80
Visceral	100

The above percentages demonstrate clearly that the Wassermann reaction is not infallible as a means of diagnosis. Therefore, sound clinical judgment should be exercised in its interpretation. Frequently it may become necessary to resort to the therapeutic test as a means of clearing up an obscure diagnosis.

Acetarsone (Stovarsol) in Amebiasis.—Reports have appeared on the favorable use of the drug in amebiasis, but they are conflicting as to its therapeutic efficiency and toxicity. Experimentally it has been shown to be approximately four times as toxic as originally noted, when administered orally to rabbits and cats. Clinical cases of poisoning are not uncommon, even when therapeutic amounts of the drug are used. New and Nonofficial Remedies states that the physician should remember that he is working with a rather toxic arsenical preparation, which may give rise to gastro-intestinal symptoms, as well as to the same cutaneous disturbances that are found with the arsphenamines, and that at the least sign of intolerance the physician should discontinue the use of the drug for the time being.—(Jour. A. M. A., September 3, 1932, p. 851.)

THE JOURNAL

OF THE

Medical Association of the State of Alabama

Editor-In-Chief

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Office of Publication:

519 Dexter Avenue.....Montgomery, Ala

Subscription Price.....\$3.00 Per Year

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent.

October 1932

HERD INFECTION AND HERD IMMUNITY

This is the term used by Topley and his associates¹ to denote the conditions governing the spread of disease in a community as contrasted with the factors which determine individual host susceptibility and resistance. The principles affecting the individual, considered by himself, have received much study and are comparatively well known. It is only recently, however, that experimental evidence has been sought regarding the poorly understood phenomena of epidemics, their rise and fall, the rate and manner of spread of the infectious agent, and the conditions necessary for the onset and maintenance of a disease in epidemic proportions. It is obvious that exact knowledge of the underlying principles is essential to the intelligent practice of preventive medicine and already the studies of Topley and his associates in London and of Webster and others² at the Rockefeller Institute have clarified some aspects of these questions and furthermore, have shown that the principles of immunity as applied

to the individual cannot always be translated into terms of the community or herd.

Most of the experimental work has been done with mouse colonies, using an organism to which this animal is normally very susceptible, such as *B. aertrycke* or *B. enteritidis*. Some work has also been done with rabbit "snuffles", due to *B. leprosepticum*. Briefly stated the chief facts which have been learned thus far are the following:

(1) When an infectious agent is introduced into a community that has previously been free from it, a pronounced increase in the number of healthy carriers always occurs. In the case of cerebrospinal meningitis this increase in the carrier rate precedes the outbreak of clinical cases. One can predict from the percentage of carriers in the population when clinical cases are going to appear. It is not certain that this rise in the carrier rate precedes the epidemic in the case of all infections. In some instances it probably occurs concomitantly with the clinical attacks, while in others it may be the result of the epidemic rather than the cause. There no longer seems to be much doubt that the typhoid carrier rate in a given area is a reflection of the incidence of the disease, but it is usually assumed that such carriers always result from a clinical attack of the disease and, therefore, should be interpreted as following the epidemic, not preceding it, as in the case of meningitis. Evidence is accumulating, however, that leads to the inference of contact carriers and latent infections in typhoid also, so that it is not possible to say definitely what relation the healthy carrier bears to the course of an epidemic. It is difficult to always separate cause from effect.

(2) The sole condition required for the indefinite propagation of an epidemic prevalence is the continuous immigration of susceptible individuals. When an infection has been introduced into a closed community it tends to run a certain self-limited course, rising to a peak of mortality and then subsiding, leaving a certain number of survivors. These survivors are relatively immune, but include individuals who are carriers or who harbor latent infection. As long as these survivors are kept to them-

(1) Topley, Greenwood, Wilson and Newbold: J. Hyg. 1928, 27, 396.

(2) Webster: J. Exp. Med. 1928, 47, 685.

selves, nothing further happens; there are no more clinical cases and no further mortality occurs. If, however, there be introduced into the colony a group of susceptible mice who are themselves free of infection, there will shortly appear a recrudescence of the epidemic. The new arrivals will suffer most, both in number of cases and in mortality, but there will also be a certain mortality among the survivors of the previous epidemic.

When new susceptibles are constantly being introduced, the course of the epidemic is entirely different. Instead of running a self-limited course, it continues indefinitely as long as susceptible individuals arrive. The mortality rate will bear a definite relation to the number of new arrivals; if these are few in proportion to the total population, deaths will be few but constant; if the new susceptibles are numerous, the death rate immediately rises.

(3) If the infection is passed from group to group, by adding normal mice to infected ones, allowing them to remain in contact for a short period and then transferring them to another normal group, it is usually impossible to maintain the infection in this manner. This observation appears to indicate that, for the continuous propagation of a disease, as in an endemic focus, there must be continuous opportunity for passage of the infectious agent from host to host without interruption. If a large infected herd is separated into small groups, the final mortality will be less than if the herd remained a single unit.

(4) It seems improbable, although proof is not complete, that variations in virulence of the infecting organisms play any part in the rise and fall of epidemics. The curve is determined largely, if not entirely, by the condition of the host, either considered individually or as a community. When susceptible individuals are numerous and external conditions favor rapid spread, there is an immediate and rapid increase of the parasite with consequently more frequent exposure. The epidemic then starts and rises to a peak, the steepness of the curve being determined by the factors mentioned. As the susceptibles are used up, the curve falls, although it can be shown that the parasite is as numerous and as virulent as during the rise of the curve.

It seems obvious, from the foregoing considerations, that the epidemiology of a disease, and, therefore, the basic principles of its control, may vary, depending on the herd susceptibility, which, in turn, is determined by the sanitary environment as well as individual immunity. The epidemiology of typhoid fever is not the same in a large city, where the rate has been extremely low, as it is in a rural area which has had a high endemic attack rate for generations. In the former instance, it can be predicted that, if the infection is introduced, it will not be able to maintain a foothold and will soon die out. In the endemic area we have an example of the infected herd into which new susceptible individuals are constantly being introduced; the attack rate is determined by the numbers of new susceptibles and occasional epidemic outbreaks will occur, apparently spontaneously, as the infection strikes an unusually large number of new hosts at one time. The carrier rate will be high and latent infections common. It can be predicted that the complete stamping out of the infectious agent will be well-nigh impossible and the degree of control will be predicated upon the limitation of the rate of spread from host to host through effective sanitary measures and the elimination of susceptible hosts through immunization. To achieve the goal, the two measures must go hand in hand; neither one alone will produce the maximum result.

L. C. H.

PENDING LEGISLATION

As this issue of the Journal goes to press, several bills of far-reaching importance to the profession and to public health are pending, the fate of which will likely have been decided 'ere the reader scans these lines. The first is H. B. 405 by Mr. Bradford, of Jefferson, which seeks to reduce the occupational tax now required of physicians. Because of the demands made, even under normal circumstances, upon the time and services of all doctors, the feeling has been quite general throughout the profession that such a tax might well, and with good grace, be entirely dispensed with. Certain it is that, under present conditions, no group has felt the financial pinch more

acutely than physicians, nor has contributed more cheerfully, both in time and talent, to the amelioration of suffering wherever found. This bill softens, although it does not remove the questionable tax heretofore imposed, and, for this reason, should receive the profession's ready endorsement.

Another bill, subtly planned and drafted, is one by Representative St. John, of Cullman, which seeks to amend Section 9932 of the Code by deleting therefrom the following sentence: *Or any profession requiring a license or certificate or other legal authorization within this State.* The section, as it now stands, reads as follows:

9932.* *Action in name of State for usurpation of office or franchise.*—An action may be brought in the name of the State against the party offending in the following cases:

(1) When any person usurps, intrudes into, or unlawfully holds or exercises any public office, civil or military, or any franchise, or any profession requiring a license, or certificate or other legal authorization within this State, or any office in a corporation created by the authority of this State.

One readily sees that, by such deletion, the *quo warranto* proceedings provided for in this section, become null and void in so far as the medical, dental and legal professions are concerned. Little fear of its passage is entertained because of the active opposition of all professions involved.

Another bill, while local in scope, is of wide interest to the profession. This is a bill by Representative Bradford, of Jefferson, (H. B. 279), which seeks to exempt training schools for nurses in Jefferson County from the present provisions of the law which vest in County Boards of Health the right to pass upon the fitness of such training schools. When one recalls the indissoluble blending of medicine, hospitals, and nurses, it is readily seen that a weakening in no link of this chain should be countenanced. The Jefferson County Medical Society, when this bill was brought to its attention, made immediate and vigorous protest, with the result that it has small, if any, chance of becoming law.

Several bills having a direct and important bearing on public health have also been introduced. One, by Senator Bonner, of Wilcox, sought to repeal, in its entirety, the "Patterson Tuberculosis Bill" passed at the

1931 session of the Legislature. Inasmuch as the State appropriations carried by this Bill do not become available until such time as the State treasury justifies, it is somewhat difficult to grasp just why legislators should wrangle over the first real move made by our State to provide some sort of facilities for hospitalizing its tuberculous. However, it should be gratifying to the profession to learn that this bill met a deserved death in the Senate. As was to be anticipated, numerous bills seeking to cut salaries and appropriations to all departments have made their appearance, many of which being so drastic in nature as hardly to merit consideration at the hands of the more sober thinkers. No agency of the State Government appreciates the urgent need for studied retrenchment and rigid economy more than its Health Department which has been in sympathetic accord with every movement looking to this end. However, it is eminently meet and proper for organized medicine in this State, pointing with pride to this fond child of State as its own, to beseech the Legislature not to have recourse to any short-sighted economies which are likely to jeopardize the health and welfare of its people or do violence to one of the most outstanding and important arms of State Government.

J. N. B.

ANNUAL CLINICAL CONGRESS AMERICAN COLLEGE OF SURGEONS

The twenty-second annual Clinical Congress of the American College of Surgeons will be held in St. Louis, October 17-21, with headquarters at the Jefferson Hotel. Dr. Franklin H. Martin, Director-General of the College, informs us that an instructive program of operative clinics has been prepared by the local Committee on Arrangements of which Dr. Evarts A. Graham is Chairman.

Hospital standardization conferences under the direction of Dr. Malcolm T. MacEachern will be held during the first four days. Four special programs have been prepared dealing respectively with fractures, curability of cancer, industrial medicine and traumatic surgery, and the teaching of surgery and the surgical specialties. Medical motion pictures will be on daily exhibition.

*Note: Paragraphs 2 and 3 of the section are omitted since they are not pertinent.

DEPARTMENT OF PUBLIC HEALTH

BUREAU OF LABORATORIES

L. C. Havens, M. D., Director

THE VALUE OF CLINICAL DATA IN LABORATORY WORK

Enclosed in every specimen container provided by the State Laboratories is a small slip containing directions for collecting and preparing the specimen for shipment and also calling for a limited amount of clinical data. Some physicians seem to think that this slip is for padding; others apparently believe that laboratory examinations are a game in which one side must withhold all information from the other lest it obtain an unfair advantage! At any rate, it is exceptional that the data requested are furnished.

The reasons for demanding a minimum amount of clinical information regarding the case under examination are (1) that the laboratory may do intelligent work; (2) to aid the physician, by performing other possible tests indicated by the clinical remarks; (3) to accumulate data regarding the prevalence and location of specific communicable diseases.

No laboratory can be expected to maintain high standards of accuracy and efficient service unless it has some contact with the clinician. A laboratory serving a large area must depend for this essential liaison upon the clinical remarks accompanying the specimen.

The laboratory does not use this information, as is sometimes suspected, to influence the result of the examination, but to determine the value of the methods in use, to improve their accuracy and to develop new methods. For example, it would be impossible to determine the value of blood cultures for the early diagnosis of typhoid fever unless the data regarding the time of onset and the clinical course are available. Similarly, one could not say how late in the course of the disease one might expect a positive result. Such information furnishes a constant check upon the efficiency of the methods in use as well as the conscientiousness of the personnel.

Frequently, when the clinical data are complete, some other test of value in establishing a diagnosis is suggested besides

the one asked for by the physician. An example of this is the numerous obscure fevers; if it is known that repeated agglutination tests for typhoid have been negative, tests for other intestinal pathogens can be made and feces cultures suggested. Throat cultures can be plated on blood agar for hemolytic streptococcus as well as the routine culture for diphtheria. Such instances where intelligent advice can be furnished are everyday occurrences in those diagnostic laboratories where close contact prevails between the clinician and the laboratory director.

One of the chief functions of the public health laboratory is to collect information as to when, where, and to what extent communicable diseases occur. It is the responsibility of the practicing physician to make an accurate and early diagnosis and to report his cases to the health officer. It is in aiding the physician to perform this obligation that the diagnostic service of the public health laboratory finds its justification. Such information, however, is useless to the health authorities unless the result of the test can be properly evaluated. An illustration in point is a recent investigation of the prevalence of Brill's disease. In addition to studying the case reports, a check was made of all positive Weil-Felix tests made in the State Laboratories. Many of these results were of little or no value because of the incompleteness of the clinical data accompanying the specimen. In the case of some, even the patient's name was lacking!

The information requested by the State Laboratories has been deliberately reduced to the smallest amount compatible with the purposes and needs which have just been discussed. The physician is not asked to furnish a large volume of useless information which is not pertinent to the examination in question. But the few remarks necessary to fill in the form require only a few moments and are essential to the proper conduct of a diagnostic laboratory service. If this information is given in every instance as completely as possible, the laboratory will do its work more intelligently and the clinician will benefit accordingly.

BUREAU OF PREVENTABLE
DISEASES

D. G. Gill, M. D., Director

DIPHTHERIA INCIDENCE

Alabama is now in the midst of its annual diphtheria "peak" and indications are that this peak will be as high or higher than in previous years. Together with this high incidence of cases there is a high mortality as is evidenced by the deaths for the first seven months of this year which are considerably above those of last year, which in turn was not a year of low incidence.

Knowledge concerning the control of diphtheria is probably as complete as for any disease and yet it continues to exist and in fact is increasing. During the past five years there have been 1130 deaths in Alabama from this cause and of these 873 occurred in children under the age of five years. Early enough treatment would have saved most of these, but still more important the use of toxoid would have prevented their occurrence. Graham¹ reports more than ninety per cent protection in a group of white children of school age with two or three doses of the toxoid prepared by the Alabama State Department of Public Health. It is rare, indeed, that a case of the disease occurs in a child previously given toxoid. From six months of age on is recognized as the time of choice for administration.

In spite of early and adequate treatment, a few cases will prove fatal. In parts of Europe during the past few years there has been noted a marked increase in case fatality and numerous explanations have been given. Anderson² and his co-workers at Leeds claim to have isolated a different strain of the diphtheria organism which does not respond to ordinary antitoxin. To this they have given the name of *B. diphtheria mitis* and they hold it responsible for the increased death rate. So far this strain has not been found in America and the necessity of making a polyvalent antitoxin has not arisen. Failure to immunize our

child population and delay on the part of the parents in calling for medical help seem to be the factors responsible for our present situation.

BUREAU OF CHILD HYGIENE AND
PUBLIC HEALTH NURSING

Jessie L. Marriner, Director

REMEMBERING WHEN*

*"Most of us, straddling more than one epoch,
delight in remembering when."*

The first county nurse had many adverse conditions to overcome; among them was a tendency to distrust, even to resent, such a notable innovation in public service. The physician naturally regarded her as a possible interloper who might presume to exercise some of the prerogatives of medical practice without observing its ethics or being bound by its traditions. The fact that she is directly responsible to the county health officer and that this official is always a licensed physician elected by the local board of health, which in turn is elected by and responsible to the county medical society, gradually won for her a recognized place as an adjunct of organized medicine and public health.

At first the use of a motor car by the nurse and the practice of driving alone through sparsely settled sections of the county were looked upon with disapproval by solid and conservative citizens. The nurse was traditionally regarded as an assistant to the physician and was readily accepted in a similar role with relation to the health officer. But the general public was slow to recognize any separate or distinctive work which could be done by a county nurse. The assertion that she would serve as a teacher of public health was received with incredulity. That she would impart to lay persons the technical knowledge that should lead to their acceptance of immunization against typhoid fever, against smallpox and against other diseases when new immunizing agents should be found and brought into use seemed preposterous. That she would teach to parents in the home simple lessons in sanitation that should make the life cycle of the hook-

1. Graham, A. H.: Recent Advances in the Prophylaxis of Diphtheria, Jour. M. A. S. A., Sept. 1932.

2. Anderson, J. S., Happold, F. C., McLeod, J. W., and Thomson, J. G.: Path. & Bact. 34, 667, Sept. 1931.

*Second in a series under this title. The first appeared in the September number.

worm a story of common knowledge to the country dweller and promote the construction and use of sanitary toilets and that she would teach expectant mothers how to care for their health during the pregnant period and why it is important to consult their physician early seemed even more chimerical to physicians than to the laity.

Hitherto, the nurse had combined a capable pair of hands with tireless footwork; she had not consciously served as teacher except in certain instances prior to her nursing experience. Her capacity to teach was frankly doubted. Her assertion that she would seek an audience with people in their homes and convince them of the wisdom of bringing their everyday conduct into line with the scientific demands of disease prevention was regarded as the vague vaporings of a dreamer.

To convince anybody at all the nurse had to carve out for herself a career of service that would show results. People whom she had advised to do so had to actually present themselves for vaccination against smallpox or immunization against typhoid. Pregnant women acting upon her advice had to actually seek the early supervision of their physicians; the parents of school children requiring medical or dental attention had to prove the effectiveness of her follow-up work by securing for their children the needed attention. In her contacts with school children, she endeavored to impart a stimulus toward the observance of health habits in addition to assisting the health officer with his examination of them and conveying always an impression of the great value of abounding health and normal growth.

These results were slow in coming but they came surely. Naturally, the human element entered in to render the results uneven and sketchy in spots. But an example of the regard in which county health service is held by those who know it best is furnished by Walker county where it was organized eighteen years ago and has been maintained without interruption since. In response to the universal urge toward economy in government, the question of continuing various county services was put on the ballot at election time in 1932 and the electorate voted almost two to one to continue the health unit.

BUREAU OF VITAL STATISTICS

W. T. Fales, Director

MORTALITY BY CAUSE AND COLOR ALABAMA 1931

There were 28,412 deaths registered in Alabama for 1931, of which 15,088 were among the white population and 13,324 among the colored. The corresponding death rates per 1,000 population were, therefore, 10.6 for the entire State; 8.7 for the white and 13.9 for the colored.

The greatest number of deaths were chargeable to diseases of the heart, which took a toll of 3,136 lives, or eleven per cent of all deaths; the corresponding rate per 100,000 population was 116.9. Nephritis was the next most frequent cause, with 2,367 deaths and a rate of 88.2. This cause was followed by tuberculosis, then pneumonia, cerebral hemorrhage and fatal accidents, the death rates being 86.3, 83.4, 61.4 and 58.7, respectively.

The death rates from typhoid fever, whooping cough, and diarrhea and enteritis under two years, were the lowest on record, namely 6.9, 3.6 and 20.6 per 100,000 population. The malaria death rate was next to the lowest ever recorded. The death rate from pellagra had returned from the level that existed from 1920-1925. There were no deaths recorded from smallpox.

In most cases the death rates for the colored population were higher than those for the white population, the most important exceptions being in the case of measles, scarlet fever, diphtheria and diabetes.

The death rate from cancer and other malignant tumors was also higher for the white population than for the colored population, the rates being 56.1 per 100,000 population for white, 51.0 for colored, and 54.3 for the total population. Cancer has shown a progressive increase in Alabama for each year since 1924. The accompanying table gives the number of deaths from different causes in Alabama for 1931, together with corresponding death rates for white, colored and total population.

DEATHS AND DEATH RATES FOR CERTAIN
CAUSES BY COLOR, ALABAMA 1931

	Number			Rate		
	White	Black	Total	White	Black	Total
ALL CAUSES	15,088	13,324	28,412	875.1	1390.1	1059.1
Typhoid fever (1, 2)	103	83	186	6.0	8.7	6.9
Typhus fever (3)	3	1	4	0.2	†	0.1
Smallpox (6)						
Measles (7)	136	36	172	7.9	3.8	6.4
Scarlet fever (8)	27	3	30	1.6	0.3	1.1
Whooping cough (9)	60	37	97	3.5	3.9	3.6
Diphtheria (19)	155	50	205	9.0	5.2	7.6
Influenza (11)	653	440	1,093	37.9	45.9	40.7
Dysentery (13)	57	29	86	3.3	3.0	3.2
Polioomyelitis (16)	11	13	24	0.6	1.4	0.9
Mening meningitis (18)	58	40	98	3.4	4.2	3.6
Tuberculosis, pulmon- ary (23)	725	1,357	2,082	42.0	141.6	77.6
Tuberculosis, other forms (24-32)	90	143	233	5.2	14.9	8.7
Syphilis (34)	68	333	401	3.9	34.7	14.9
Malaria (38)	97	120	217	5.6	12.5	8.1
Other infectious dis.	158	113	271	9.2	11.8	10.1
Cancer, oth. malig. tumors (45-53)	968	489	1,457	56.1	51.0	54.3
Tumors, nonmalignant (54, 55)	43	56	99	2.5	5.8	3.7
Chronic rheumatism (57, 58)	27	13	40	1.6	1.4	1.5
Diabetes mellitus (59)	207	82	289	12.0	8.5	10.8
Pellagra (62)	185	263	448	10.7	27.4	16.7
Alcoholism (75)	21	7	28	1.2	0.7	1.0
Oth. gen. diseases and chronic poisonings	182	68	250	10.6	7.1	9.3
Tabes dorsalis and gen- eral paralysis of the insane (80, 83)	35	33	68	2.0	3.4	2.5
Cerebral hemorrhage (82a, b)	941	706	1,647	54.6	73.7	61.4
Paralysis (82c, d, e)	93	84	177	5.4	8.8	6.6
Oth. dis. nerv. system	254	193	447	14.7	20.1	16.7
Dis. of heart (90-95)	1,779	1,357	3,136	103.2	141.6	116.9
Oth. dis. cir. system (96-103)	145	111	256	8.4	11.6	9.5
Bronchitis (106)	40	21	61	2.3	2.2	2.3
Pneumonia (107-109)	1,277	961	2,238	74.1	100.3	83.4
Oth. dis. resp. system	89	51	140	5.2	5.3	5.2
Diarrhea and enteritis Under 2 years (119)	364	190	554	21.1	19.8	20.6
2 yrs. and over (120)	126	62	188	7.3	6.5	7.0
Appendicitis (121)	208	108	316	12.1	11.3	11.8
Diseases of liver (124- 127)	161	80	241	9.3	8.3	9.0
Oth. dis. digest. system	418	335	753	24.2	34.9	28.1
Nephritis (130-132)	1,254	1,113	2,367	72.7	116.1	88.2
Oth. dis. genit. syst. (133-139)	170	159	329	9.9	16.6	12.3
Puerperal state (140- 150)	274	230	504	15.9	24.0	18.8
Dis. skin, bones (151- 156)	74	41	115	4.3	4.3	4.3
Congenital malforma'n Dis. early infancy (158-161)	168	36	204	9.7	3.8	7.6
Senility (162)	943	594	1,537	54.7	62.0	57.3
Suicide (163-171)	177	292	469	10.3	30.5	17.5
Homicide (172-175)	196	23	219	11.4	2.4	8.2
Accidental causes	199	401	600	11.5	41.8	22.4
Other external causes	972	602	1,574	56.4	62.8	58.7
Unknown or ill- defined causes	1	2	3	†	†	†
	696	1,763	2,459	40.4	183.9	91.7

†Number too small to compute.

BUREAU OF INSPECTION

C. A. Abele, Director

Foreword: The following paper, prepared by Mr. E. M. Yohn, Sanitation Officer of the Baldwin County Health Department, is printed in this space as an example of the results obtainable in the program of stimulation of health department personnel advanced by the Integrating Units of the State Health Department.

Mr. Yohn has not had special education in dairy husbandry or veterinary medicine, but has been Sanitation Officer in the Franklin and Baldwin County Health Departments for about five years. In both counties he has conducted the milk quality control activities with the assistance and guidance of District Dairy Inspectors.

MILK

- Its Importance to a County
- Some Epidemics Traced to Impure Milk
- Brief Discussion of the Standard Milk Ordinance

In thinking of the importance of milk to a county there are two important factors: first, its part in supplying food; second, its money value.

Milk has always been and will undoubtedly continue to be the most important single food for man. Milk is the only single substance whose sole function in nature is to serve as a complete food. It is a perfect food for the young of the same species. Nature provides this perfect food for the young calf, the young pig, or the young baby. Cow's milk is the best substitute we have for the baby whose mother cannot feed it in the natural way.

After weaning, milk is the best single food to promote growth in children. The average child can take milk freely with good results and should have it every day. Very often a child does not like the taste of it and will not drink any milk. Here is a problem the mother can solve to some extent by finding out the things the child will eat that have milk or milk products in them, and preparing them for it. Children should be taught the value of milk as a part of their diet and encouraged to use it. Adults should not forget this lesson; although it may not be as important for them as the growing child, it is still one of the best foods for them.

Dairying is one of our most important and best paying industries. The returns from the sale of milk and milk products in any county of the State of Alabama is a big asset to its citizens every year.

Milk is not only a good food for man, it is also a good food for disease germs and they multiply very rapidly in it under favorable conditions. For this reason, it has been known to cause epidemics. It is very easy for a dairyman, whose milk has become contaminated, to spread the disease over a whole neighborhood. Some of the

diseases known to have been transmitted by milk are typhoid fever, scarlet fever, diphtheria, septic sore throat, undulant fever, the diarrheal infections, and tuberculosis.

Typhoid probably takes the lead in these milk-borne diseases. This can very likely be attributed to typhoid carriers working in and around the dairies. Since there is a varied opinion among the medical profession, I will quote Rosenau on the transmission of tuberculosis by milk. "About one-quarter to one-third of all cases of tuberculosis in children under five years of age are associated with the bovine type, but only about four per cent of tuberculosis deaths under five years are due to bovine tuberculosis. It is probable that all these cases derive their infection through the ingestion of tubercle bacilli in cow's milk".

Some epidemics are caused by infection from diseased cows, but the largest percentage of infection enters the milk through improper methods of milking and handling. Although milk can and has caused many epidemics of various kinds, it is a safe food when the necessary precaution is taken in its production and handling.

The Standard Milk Ordinance, when adopted by the proper authorities and enforced, will make a safe milk supply for any town. This ordinance is used for the protection of commercial milk supplies. It is practicable in every way. It is simple enough so that even the small dairyman can comply with it, and yet it will protect a milk supply of any volume. Everywhere it has been enforced, the dairyman, the public, and public health officials have been well pleased with the results.

In producing a safe milk supply the first thing to do is to get healthy cows; this will eliminate several milk-borne diseases. Items number one and two in the Ordinance require a herd free of disease. The next step is cleanliness, and the remainder of the ordinance is devoted to this. Items number three to eleven, inclusive, regulate the barn, lot, toilet, water supply, and milk house construction; twelve to twenty-one regulate methods of milking, handling, disinfecting, sterilizing, cooling, and an examination of all persons employed. All commercial milk supplies should be regulated by a rigid enforcement of the Standard Milk Ordinance.

Comment: The foregoing paper is concise, and indicates that its writer is sufficiently familiar with the subject to discuss it intelligently with dairymen and milk consumers. Health officers engaged in milk control activities might lighten their burdens to some extent by encouraging their dairy inspector or sanitation officers to prepare papers on this and other subjects, which, possibly with some editing, might be published in the county newspapers.

BUREAU OF ENGINEERING

G. H. Hazlehurst, Director

CONTROL OF TASTES AND ODORS IN PUBLIC WATER SUPPLIES

Contributed by
T. H. Milford

Tastes and odors are introduced into waters by two agents: directly by nature in its cyclical changes; and by man in his activities for existence, comfort and pleasure.

Foremost among the tastes and odors introduced by nature are those caused by plankton, the small microscopic or near microscopic aquatic life. These have been the subject of a previous paper*.

Other natural odors or tastes are due to decaying organic matter. These are especially to be noted in newly impounded sources of water supply and arise from leaves, vegetation, stumps, branches, etc., not entirely cleared away, and hence, undated when the pond or lake is filled. Depletion of dissolved oxygen in the water, causing the death of aquatic life with resultant decay and decomposition, is often the cause of these natural odors. Such conditions come about largely in hot weather at times when the water is incapable of holding enough oxygen to support such life.

Odors and tastes may also be due to natural inorganic compounds such as hydrogen sulphide, ferrous or ferric compounds, and oils in rocks. Such troubles might be looked for in well or spring waters, but rarely in surface waters.

Man-made odors and tastes come about mainly by the discharge of wastes from industrial plants, such as coke ovens, gas plants, petroleum plants, wood distillate

*August 1932 issue of this Journal.

plants, etc., into waters used for a public supply.

Other artificial odors and tastes are due to improper operation of purification processes such as chlorinous tastes and chloro-compounds resulting from the excess addition of chlorine. Sometimes tastes and odors are due to "sludge tastes"; that is, the decaying sludge in the bottom of the settling basin contributes a woody, musty taste to the water.

Accumulation of sediment in mains, especially in dead ends where these sediments are undergoing bacteriologic and/or chemical changes, is sometimes the cause of these disagreeable features.

Treatment for removal of such tastes is varied. The science of processing water for human consumption has had many advancements in recent years and especially in taste and odor control.

Copper sulphate has been in long use as a control of plankton growths. Chlorine is also effective. The use of such chemicals for killing aquatic growths may result in a temporary increase in tastes and odors shortly thereafter. This is due to subsequent decay of the organisms and the increased release of essential oils.

Aeration of water is also effective to an extent in removing oxidizable tastes and odors. It also has a "sweeping out" tendency whereby the disagreeable gases are replaced by oxygen from the air. Such a treatment would probably be suitable for an oxygen-depleted water.

Excess chlorine followed by dechlorination has proved effective in some cases in removing organic odors. Chlorine tastes should never remain in any water supply. Within recent years ammonia with chlorine has been used successfully in preventing odors and tastes formed by the reaction of chlorine with other chemicals or substances present in the water. The ammonia inhibits the oxidizing action of chlorine and prevents the formation of malodorous and bad tasting compounds.

The various chars have been known for years to have odor and taste removing possibilities and recently have been processed so that this ability is increased many fold. Under the name of activated carbons, they are now used for removing tastes and odors and have proved highly successful.

Periodic flushing of mains often proves successful in removing tastes and odors due to sediment in the systems.

There are other less frequently used materials for taste and odor reduction or removal. They need not be discussed here.

A few specific examples, encountered in the State, of odors and tastes resulting from one or more of the above causes, with the method of correction, will now be given. In one of our towns with a newly impounded supply using the conventional purification plant, there was experienced a disagreeable taste and odor period in the fall of the first year of operation. The waters had been impounded after vegetation growth had begun. These waters had decaying organic matter to contribute tastes and odors as well as plankton growths. Copper sulphate treatment of the pond decreased plankton growths, but disagreeable odors and tastes still appeared in the finished water. A measure of success was attained with ammonia chlorine treatment, but complete removal was only obtained by the use of activated carbon.

A new purification plant was built in another town. Water was taken from the river and stored in a raw water storage reservoir. Complaints of tastes and odors resulted in a call for aid. Investigation showed plankton growths in the river water, increased numbers in the raw water, and some growths in the coagulating or settling basin. The water in these basins was dumped or wasted. Identification of types found in the river water with calculation of proper doses of copper sulphate was made. Subsequently, at periodic intervals during the warm weather, this chemical was applied to the raw water reservoir and has prevented a recurrence of the disagreeable features.

An iron removal plant was built on a deep well supply. Sterilization with chlorine was not needed at this plant, but chlorine was being used for oxidizing purposes. Complaints of chlorinous tastes were made. Investigation resulted in a theory that insufficient amounts of chlorine were being added for complete oxidation of the iron. Tripling the chlorine dose improved the situation and no more complaints arose.

A well water, by examination, revealed corrosive tendencies and complaints had

been received in regard to bad tastes and odors. In this case the tastes and odors were attributed to compounds of iron in the water. A device for hydrated lime was installed and the trouble was remedied. The lime prevented the absorption of the iron which was being taken up from the pipes due to the solvent action of the water.

At another plant the painting of the inside of a tank was the cause of disagreeable tastes and odors. Removal of this paint and repainting the tank resulted in the elimination of tastes and odors.

At another plant improper conditioning of water during and after purification resulted in the production of a corrosive water and was the cause of appearance of bad tastes and odors. The correction of these defects removed the disagreeable features.

Aeration has had general application on both deep seated and surface waters to remove the many forms of entrained gas, as carbon dioxide, methane, volatile oils, sulphurated hydrogen, and other odor or taste producers.

Each taste and odor problem needs individual study to determine the cause and then a treatment can be found to cure the trouble. It is sometimes necessary to try different remedies, but with proper knowledge, operation and finances, it should be practicable to deliver a water free from objectionable tastes and odors.

CURRENT STATISTICS

State Department of Health

*PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA

	1932 August	1932 July	Total Cases to Date This Year Last Year	
Typhoid	134	142	542	575
Typhus	26	17	107	36
Malaria	355	280	1170	1351
Smallpox	0	28	453	279
Measles	1	3	257	9147
Scarlet fever	71	54	606	898
Whooping cough	74	175	1264	606
Diphtheria	109	70	701	679
Influenza	24	29	2610	5769
Mumps	40	73	819	1041
Poliomyelitis	4	3	18	31
Encephalitis	4	2	14	30
Chickenpox	4	21	879	1478
Tetanus	7	8	46	31
Tuberculosis	398	487	3179	3607
Pellagra	79	128	570	900
Meningitis	4	5	47	197
Pneumonia	54	43	1914	2858
Syphilis (private cases)	161	204	1450	1058
Chancreoid (private cases)	3	2	32	46
Gonorrhea (priv. cases)	113	89	926	1068
Ophthalmia neonatorum	0	2	14	9
Trachoma	1	1	2	2
Tularemia	1	4	28	5
Undulant fever	4	4	14	11
Dengue	1	0	3	1
Rabies	0	0	0	1

*As reported by physicians and including deaths not reported as cases.

PROVISIONAL MORTALITY STATISTICS Alabama, July 1932

	Number of Deaths Registered July 1932			Annual Rate per 100,000 Population		
	White	Black	Total	July 1932	June 1931	June 1930
ALL CAUSES	1190	1022	2212	963.0	958.6	1212.3
Typhoid fever	11	10	21	9.1	13.1	16.4
Smallpox					0.9	2.2
Measles						1.3
Scarlet fever						
Whooping cough	13	9	22	9.6	1.7	14.6
Diphtheria	6	1	7	3.0	2.2	0.9
Influenza	4	7	11	4.8	7.4	7.1
Pneumonia, all forms	42	23	65	28.3	31.0	35.0
Poliomyelitis					1.7	0.4
Tetanus		1	1	0.4	1.3	1.3
Tuberculosis, all forms	64	121	185	80.5	73.5	77.9
Tuberculosis, pulmonary	57	114	171	74.4	65.2	70.4
Malaria	6	12	18	7.8	11.4	19.9
Cancer, all forms	81	42	123	53.5	44.6	52.2
Diabetes mellitus	24	7	31	13.5	8.7	7.1
Pellagra	17	17	34	14.8	19.3	32.3
Cerebral hemorrhage, apoplexy	92	46	138	60.1	48.6	68.6
Diseases of heart	151	113	264	114.9	111.2	123.5
Diarrhea and enteritis						
Under 2 years	52	23	75	32.6	49.0	54.9
2 years and over	24	4	28	12.2	9.6	18.6
Nephritis	114	115	229	99.7	79.2	97.8
Puerperal state, total	11	18	29	12.6	20.1	16.8
Puerperal septicemia	3	7	10	4.3	11.4	4.4
Congenital malformation	12	3	15	6.5	4.8	7.5
Congenital debility and other diseases of early infancy	77	44	121	52.7	54.7	63.2
Senility	16	17	33	14.4	14.0	15.5
Suicides	17	1	18	7.8	5.7	6.2
Homicides	15	35	50	21.8	27.1	18.6
Accidental burns	3	6	9	3.9	1.7	3.1
Accidental drownings	13	15	28	12.2	8.7	12.8
Accidental traumatism by firearms	8	1	9	3.9	3.9	4.4
Mine accidents		1	1	0.4	1.7	2.2
Railroad accidents	6	5	11	4.8	2.6	3.5
Automobile accidents	23	8	31	13.5	13.6	16.4
Other external causes	36	27	63	27.4	24.5	24.3
Other specified causes	204	162	366	159.3	166.3	171.7
Ill-defined and unknown causes	48	128	176	76.6	94.1	118.6

Current Comment

ATHENS MAKES USE OF ANCIENT AQUEDUCT

When Greeks and Romans builded, it was for permanency. The new water works for the City of Athens, constructed under the direction of an American, Richard M. Merri-man, of Bethlehem, Pa., includes in its system the ancient Hadrian Aqueduct, a fifteen mile tunnel through the Plains of Attica.

This aqueduct, apparently, was originally constructed during the second century after Christ. It was used for 1200 years, but was then abandoned for some unknown reason. It has now been cleaned and renovated, and through it flows water for the citizens of Athens who for centuries have scrimped along on one and one-half gallons of water a day for all purposes.—Health News, N. Y. State Department of Health, August 15, 1932.

Book Abstracts and Reviews

(The publishers of the books reviewed in this column are kind enough to supply to the Editors of the Journal newly published books for review. The Editors hope that, as a mark of appreciation, readers of the Journal may be able to grant to the representatives of these publishing houses the courtesy of an interview, when sought.)

American Medical Dictionary. Sixteenth Edition. A complete Dictionary of the terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Nursing, Veterinary Science, Biology, Medical Biography, etc. By W. A. Newman Dorland, M. D., Member of the Committee on Nomenclature and Classification of Diseases of the American Medical Association. Revised and Enlarged. Octavo of 1,493 pages, 941 illustrations, 279 portraits. Philadelphia and London: W. B. Saunders Company, 1932. Flexible and Stiff Binding, Plain \$7.00 net; Thumb Index \$7.50 net.

Since 1900, the American Illustrated Dictionary has been to the medical profession what Webster's dictionary is to the layman. The rapid strides made in medicine and allied subjects during the past thirty-two years has necessitated frequent revisions of this dictionary and the present volume is the sixteenth edition. The terminology conforms to the standards of the American Medical Association and other scientific bodies which have adopted definite standards. There are over three thousand new words in this latest edition. Anyone who reads extensively must of necessity come across words whose meanings are unfamiliar to him. Anyone who writes must often wonder whether he is spelling certain words correctly and in the discussion of medical papers or the presentation of addresses one must feel a certain sense of security when he knows that his scientific terms are used correctly and his words pronounced properly. This dictionary offers guidance in all three problems. If one wishes to know the composition of a new drug, the exact details of a new sign or syndrome, the average dose of a drug or serum, the details of performing various tests and operations, or if one wishes to know something about a man whose name is appended to some medical discovery, he may find this information quickly in the American Illustrated Dictionary. The thumb index saves much time for one who uses a dictionary frequently.

C. K. W.

Clinical Endocrinology of the Female: By Charles Mazer, M. D., F. A. C. S., Assistant Professor of Gynecology and Obstetrics, Graduate School of Medicine, University of Pennsylvania; Gynecologist to Mt. Sinai and Northern Liberties Hospitals, Philadelphia; and Leopold Goldstein, M. D., Demonstrator of Obstetrics, Jefferson Medical College; Assistant Gynecologist to Mt. Sinai Hospital; Formerly Fellow in Gynecologic Research, University of Pennsylvania. 518 pages with 117 illustrations. Philadelphia and London: W. B. Saunders Company, 1932. Cloth, \$6.00.

During the past ten years, a tremendous amount of research work has been done in an attempt to solve the riddle of glandular control of the female reproductive functions. The discovery of comparatively cheap sources of crude material has led to the production of pituitary and ovarian hormones in fairly pure states and at reasonable costs. These hormones are now available for clinical use. Since their chief indication is for the relief of menstrual disturbances, and since every physician is consulted frequently for treatment of dysmenorrhea, amenorrhea, and menorrhagia, it behooves every phy-

sician to familiarize himself with the uses of these hormones, their indications, their mode of action and the details of administration.

During the past twelve months we have reviewed two volumes on the subject of Female Sex Hormones. The first of these was written by Robert Frank and dealt with the experimental and clinical aspects of the ovarian hormones. More recently we reviewed a volume by William T. Graves entitled, "Female Sex Hormonology". In this volume the author dealt with the ovarian hormone and with the pituitary sex hormone. The volume is brief, concise and practical. If anyone is interested in delving more deeply into the interesting and intricate field of female endocrinology, he will derive much scientific pleasure as well as a valuable store of information from the recent publication of Mazer and Goldstein.

As an introduction to the practical aspects of the subject, the authors first review the physiology of the various glands of internal secretion and their relation to each other in the control of sexual function. They then describe the physiology of normal menstruation and ovulation and the glandular pathology responsible for the various types of menstrual disturbance. Other chapters deal with the subject of functional sterility, endocrine regulation of pregnancy and parturition, the hormone test for pregnancy and the various types of endocrine obesity.

The very extensive bibliography in the appendix testifies to the vast amount of work done by the authors in preparing this book. The illustrations are excellent and the diagrams and tables are of great value.

C. K. W.

The Practical Medicine Series Comprising Eight Volumes on the Year's Progress in Medicine and Surgery; Neurology. Edited by Peter Bassoe, M. D., Clinical Professor of Neurology, Rush Medical College of the University of Chicago. **Psychiatry.** Edited by Franklin G. Ebaugh, A. B., M. D., Professor of Psychiatry, University of Colorado Medical School Series 1931. Cloth. Price, \$2.25. Pp. 446, with illustrations. Chicago: Year Book Publishers, Inc.

The neurological literature is enriched by the publication of the 1931 edition of Neurology and Psychiatry by Drs. Bassoe and Ebaugh. This book is an accurate and up to date resume of the current neurological literature. It gives to us the extensive clinical experience and observation of the leading neurologists and psychiatrists throughout the country. It is very readable and concise and abstracts the major neurological problems in an interesting style.

Of special interest are such articles as the treatment of epilepsy with the ketogenic diet, the malaria and diathermy treatment of general paresis, tryparsamide therapy in neurosyphilis, and the use of convalescent serum in the treatment of poliomyelitis.

Details regarding the localization of brain tumors are recorded.

There is an interesting report of a case of pneumococcus meningitis, type III, treated and cured with potassium permanganate per rectum. Many practical and enlightening ideas on endocrinology are presented.

Emphasis is placed on the importance of psychiatry and mental hygiene in medicine, and some of

the physicochemical factors in mental disorders are presented, such as, an elevation of blood sugar in manic depressive, a low blood sugar in benign stupor, and the water balance and salt equilibrium in epilepsy. Other major neurological problems are now under investigation, and we will probably find some abnormal physicochemical factors associated with these problems that will change our perspective about many mental conditions and enable us to treat them more intelligently.

There is a discussion of the mental disorders associated with hyperthyroid and hypothyroid states, and menopause.

It would be well for every physician to review the excellent resume of current neurological abstracts.

W. S. H.

The Practical Medicine Series Comprising Eight Volumes on the Year's Progress in Medicine and Surgery: Dermatology and Syphilis. Edited by Fred Wise, M. D., Professor of Dermatology and Syphilology, New York Post-Graduate Medical School and Hospital of Columbia University, and Marion B. Sulzberger, M. D., Associate in Dermatology and Syphilology, New York Post-Graduate Medical School and Hospital of Columbia University. Urology. Edited by John H. Cunningham, M. D., Associate in Genito-Urinary Surgery, Harvard University, Post-Graduate School of Medicine. Series 1931. Cloth. Price, \$2.25. Pp. 458, with illustrations. Chicago: Year Book Publishers, Inc.

This volume is a summary of the medical literature of these specialties for 1931. It consists of abstracts of articles with frequent notes by the editors. It is written for the general practitioner, but is sufficiently complete to serve as a reading outline for the specialist.

The section on dermatology includes chapters on experimental dermatology, the dermatoses, the infectious dermatoses, mycotic infections and treatment. There is a comparatively small section on syphilis. The section on urology includes chapters on general considerations of urology, gonorrhea, the kidney and adrenal, the ureter, bladder, urachus, prostate and genitalia.

The book is worth while because it gives the current attitude towards practically all of the problems in these fields. It is well written, the selection of material good and the ground is well covered. The worth of all translated or abstracted material is limited by the resources of the editor. The authors of this volume, however, are competent and have done their work well.

L. L. H., Jr.

The Practical Medicine Series Comprising Eight Volumes on the Year's Progress in Medicine and Surgery: Obstetrics. Edited by Joseph B. DeLee, A. M., M. D., Professor of Obstetrics, University of Chicago Medical School. Gynecology. Edited by J. P. Greenhill, B. S., M. D., F. A. C. S., Attending Gynecologist, Cook County Hospital. Series 1931. Cloth. Price, \$2.50. Pp. 665, with illustrations. Chicago: Year Book Publishers, Inc.

The first part of this book is devoted to obstetrics, the latter part to gynecology. The material in the first part bears the handiwork of Dr. DeLee; its briefness and simplicity of words is most appealing. The material is obtained from recent outstanding articles in the literature with occasional comments from the editor. The obstetrical material is divided under the general heading of pregnancy, labor, puerperium, the new-born, and a miscellaneous portion on the teaching of midwifery.

There is an abundance of material upon the Aschheim-Zondek and kindred tests for pregnancy; the complications of pregnancy are most carefully analyzed; the discussion of that elusive will-o'-the-wisp, painless childbirth, by means of anesthesia and analgesia is most instructive, new drugs as avertin, sodium amylal and pernocton are flashed for trial; operative obstetrics is carefully prepared, conservatism is stressed. A warning is sounded against extending the indications for cesarean section; there is a strong plea for more care during the puerperium, sepsis is attacked with vengeance; the new-born baby is not forgotten, gentleness in treatment is paramount.

The gynecological part is well prepared; sterility, operative technic, menstruation and its disorders, infections and tumors are discussed at length. Electrotherapy and radiology bring the finis.

The delightful manner in which Dr. DeLee handles the obstetrical material and the richness of his comments and personal touches, plus the great amount of information in this book makes it worthy of hearty commendation.

F. M. T. T.

The Practical Medical Series Comprising Eight Volumes on the Year's Progress in Medicine and Surgery: Surgery. Edited by Everts A. Graham, A. B., M. D., Professor of Surgery, Washington University School of Medicine; Surgeon-in-Chief of the Barnes Hospital and the Children's Hospital, St. Louis, Mo. The Year Book Publishers, Chicago. 1931. 762 pages. Illustrated. Cloth. \$2.50.

The Year Book of Surgery contains abstracts of over a thousand surgical papers selected from American and foreign journals. It duplicates the abstract sections of some of our American journals and possesses no advantage over them. If the editors had selected the outstanding articles of the year, or if they had summarized advances made in our knowledge of each individual subject, the book would have been a valuable and practical addition to the library of anyone interested in surgery. Many of the articles which have been included add nothing new to the subject, while, on the other hand, other articles of great value have been omitted.

Abstracts never can convey to the mind of the reader all of the points which the original paper contained. One must not expect to derive from the reading of these abstracts more than a general idea of the contents of the articles reviewed.

In most of these abstracts clarity has been sacrificed for brevity. Abbreviations may save the typesetter a certain amount of trouble but they make reading much more difficult. The absence of punctuation marks, the presence of sentences without verbs and the numerous typographical errors add to that difficulty. Many of the abstracts look like the unedited notes of the reader. The few brief notes written by the editor himself are of considerable interest. The rest of the book gives the appearance of having been rushed through the press.

C. K. W.

Preventive Medicine, by Mark F. Boyd, M. D., M. S., C. P. H., Member Field Staff, International Health Division of Rockefeller Foundation; formerly Professor of Bacteriology and Preventive Medicine, University of Texas. 532 pages, 4th edition, W. B. Saunders Company, Publishers, Philadelphia. 1932. Cloth, \$4.50.

According to the publishers, this treatise, designed primarily for the practicing physician and

the medical student, has been entirely reset and reprinted. Yet throughout the whole book evidence appears that the revision has not included many of the recent advances in the rapidly developing field of preventive medicine. In the discussion of small-pox, the work of Ledingham relating the Paschen bodies to the etiologic agent is not mentioned nor is Gordon's flocculation reaction as a diagnostic test. Probably some discussion should also have been given of post-vaccination encephalitis. In the section on rabies only the original dried cord vaccine is described, in spite of the fact that phenolized suspensions are today the usual method. The usefulness of the book for Southern physicians, particularly, is diminished by the failure to recognize the recent progress of the Southern States in public health. Thus, the maps of the birth and death registration areas are ten years old, showing Alabama and other states still outside the registration area. Similarly, in a quite extensive and otherwise thorough description of excreta disposal, pictures of insanitary privies are given but no description of or specifications for the sanitary privy recommended by public health authorities and required by law in several states.

The book, on the whole, is a concise, well-balanced review of a specialized field of medicine with which it behooves every physician to have an acquaintance. Chapter 23 contains an admirable discussion of the relation of the practitioner to preventive medicine and his responsibilities to public health; this could well be further developed. While it is to be hoped that the author will include more recent knowledge in the next edition, this one, as it stands, is a useful addition to the library of the clinician who wishes to have available a brief and concise reference to practices and methods in preventive medicine.

L. C. H.

Minor Surgery: By Frederick Christopher, S. B., M. D., F. A. C. S., Assistant Professor of Surgery at the Northwestern University Medical School, Chicago; Attending Surgeon at the Evanston (Ill.) Hospital. With Foreword by Allen B. Kanavel, M. D., F. A. C. S., Professor of Surgery, Northwestern University Medical School. Second Edition. Reset. 998 pages with 687 illustrations. Philadelphia and London: W. B. Saunders Company, 1932. Cloth. \$10.00 net.

"It is by the study of minor surgery that the surgeon begins his apprenticeship". It is also through the practice of minor surgery that many an aspiring young surgeon tides over the lean years which precede his rise to prominence. Much of the work included under minor surgery is performed by the general practitioner and in Christopher's *Minor Surgery* he can find much information applicable to his day's work.

The first edition of this book proved a very popular one. In the second edition the author has rewritten the section on vascular diseases and has made additions to the chapters on local anesthesia, fractures, postoperative care, human bites, snake bites, burns, electric injuries, chest injuries, and venoclysis.

Of particular interest are the chapters on the following subjects: the reduction of the coagulating time of the blood by the intravenous injection of Congo Red; unusual cases of foreign bodies and the methods of removal; the treatment of boils by insulin; alcohol injection in the treatment of pro-

lapse of the rectum in children; the injection treatment of varicose veins; the treatment of post-operative urinary retention with borated glycerine; wounds due to indelible pencil injuries; the grafting of finger nails; and Thie's method of removing tattoo marks. The author has quoted freely from the works of others, giving credit to all for their contribution. The detailed outline of treatment for tetanus and rabies is extremely valuable.

This is really a good book. The lucid descriptions, the appropriate illustrations and the perfect printing contribute considerably to the pleasure derived from reading it.

C. K. W.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1931. Cloth. Price, \$1.00. Pp. 100. Chicago: American Medical Association.

This volume contains the collected reports of the action of the Council on Pharmacy and Chemistry on all products which have been found unacceptable or which have been omitted from New and Non-official Remedies during the past year. It contains also the special reports authorized by the Council during the year and preliminary reports on articles which show promise but which are not yet ready for admission to New and Nonofficial Remedies nor suitable for general use by the medical profession. Among the reports on products found unacceptable are those on Thymophysin, a preparation of posterior pituitary and thymus, advocated as a safe and reliable means of accelerating delivery and marketed under false claims as to its essential action, as to its strength, and as to its safety for mother and child; on Bismuthoidal, claimed to be colloidal bismuth, and marketed with unwarranted claims of value in the treatment of syphilis intravenously; on Frenly Enema Cream, a complex, unscientific mixture, marketed under a therapeutically suggestive name with unwarranted claims of therapeutic value in a host of conditions; on Hayner's Normaline, an unoriginal preparation of formaldehyde and zinc chloride marketed under a noninforming name without a quantitative statement of composition on the label or in the advertising and with unwarranted and misleading claims; on Pernocton, a barbituric acid product marketed under a therapeutically suggestive name and with unacceptable recommendations for intravenous use; on Solution Normet, an unscientific mixture of citrates, marketed with unwarranted claims; on Alqua Water, Calso Water, and Alka Water, irrational, proprietary "alkalizing" mixtures marketed with unwarranted and misleading claims. The preliminary reports on Nucleotide K 96, a preparation of pentose nucleotides which has shown promise in the treatment of leukopenia, and on Carbarsone, p-carbamino-phenyl' arsonic acid, proposed for use in amebiasis but needing further confirmatory evidence of value, are both timely and interesting. Perhaps the most noteworthy are the special reports, The Intravenous Use of Barbitol Compounds and The Average Optimum Dosage of Cod Liver Oil. The former gives the Council's considered verdict on the dangers and limitations of the use of barbitals intravenously and the latter gives the result arrived at from a questionnaire sent to leading pediatricians.

Truth About Medicines

NEW AND NONOFFICIAL REMEDIES

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Nonofficial Remedies:

Scarlet Fever Streptococcus Toxin for Immunization—(National). A scarlet fever streptococcus toxin (New and Nonofficial Remedies, 1932, p. 381) prepared by the method of Drs. Dick by license of the Scarlet Fever Committee, Inc. It is marketed in packages of five vials, fifty vials and single vial packages. National Drug Co., Philadelphia.

Scarlet Fever Streptococcus Toxin for the Dick Test—(National).—It is prepared by the method of Drs. Dick by license of the Scarlet Fever Committee, Inc. (New and Nonofficial Remedies, 1932, p. 397). The product is marketed in packages of one vial containing sufficient toxin for ten tests and in packages of one vial containing sufficient toxin for one hundred tests. National Drug Co., Philadelphia. (Jour. A. M. A., September 3, 1932, p. 833)

Haliver Oil with Viosterol 250D—Abbott. —Halibut liver oil, adjusted by addition of maize oil to have a vitamin A potency of not less than 30,000 pharmacopeial units per gram, and by addition of a sufficient amount of viosterol in oil 250 D to assure a vitamin D potency of not less than 250 D. The actions and uses are the same as those of cod liver oil. The product is marketed in the form of soluble gelatin capsules haliver oil with viosterol 250 D—Abbott, 3 minims. Abbott Laboratories, North Chicago.

Parke-Davis Haliver Oil with Viosterol —250 D.—Halibut liver oil, adjusted by addition of maize oil to have a vitamin A potency of not less than 30,000 pharmacopeial units per gram and by addition of a sufficient amount of viosterol in oil 250 D to assure a vitamin D potency of not less than 250 D. The actions and uses are the same as those of cod liver oil. The product is supplied in the form of soluble gelatin capsules Parke-Davis haliver oil with vioster-

ol-250 D, 3 minims. Parke, Davis & Co., Detroit.

PROPAGANDA FOR REFORM

Analytic Statements on Labels and in Advertising.—The Committee on Foods reports that analytic statements on labels and in advertising shall be expressed in such terms as will enable correct technical and popular interpretation and be properly and truthfully informative. Listed analytic components shall be named in conformity with the methods used in their determination and preferably those of the Book of Methods of the Association of Official Agricultural Chemists. The percentage values should be expressed in figures with significance only. (Jour. A. M. A., September 3, 1932, p. 833)

Pepsin and Rennin.—The ability of gastric juice to clot milk has been ascribed to a special proteolytic enzyme, chymosin or rennin. Recently, the isolation, in comparatively pure form, of a rennin preparation from the mucosa of the fourth stomach of the calf, has been reported. This preparation shows the highest clotting power yet reported; at the same time it is practically devoid of peptic activity. The elementary composition and the properties of the preparation indicate that it is a thioprotease and, unlike pepsin, it contains neither chlorine nor phosphorus. Rennin is irreversibly inactivated by alkali, it is easily soluble in dilute acid, it is not coagulated by heat, it gives quite different protein color tests, it is not dialyzable, and it is soluble in water at its iso-electric point, whereas pepsin is not. The investigators have shown that the enzyme is present in the mucosa in the form of a precursor that becomes activated, as does pepsinogen, by hydrochloric acid. Efforts to obtain rennin in crystalline form, as has been accomplished for urease, pepsin, trypsin and amylase, are yet unsuccessful. (Jour. A. M. A., September 3, 1932, p. 835)

Vitamin C—The Antiscorbutic Vitamin. —Of late, progress toward the isolation and identification of some of the vitamins has been greatly accelerated. According to Rygh and his co-workers, the antiscorbutic vitamin can be produced from the long known alkaloid narcotine and is presuma-

bly so derived in nature. Unfortunately, the experimental results and conclusions of these investigators have failed of confirmation by a number of scientific workers both here and abroad. King and his associates venture to identify vitamin C with the hexuronic acid found by Szent—Gyorgyi in various plant tissues and in the suprarenal structures. These biochemists have isolated from orange juice a crystalline product that is protective to the conventional laboratory test animal, the guinea pig, in daily doses of 0.5 mg. If the claims are further substantiated, as now seems likely, a great step in advance will have been taken. In any event, further specific knowledge regarding the precise etiology and cure of scurvy cannot fail to result from these trends in research. (Jour. A. M. A., August 20, 1932, p. 658)

ACCEPTED DEVICES FOR PHYSICAL THERAPY

The following have been accepted by the Council on Physical Therapy of the American Medical Association for inclusion in its list of accepted devices for physical therapy:

Lang Hospital Insulated Prolonged Flowing Bath with Hammock.—The Lang Hospital Insulated Prolonged Flowing Bath with Hammock is designed for general hydrotherapy treatments. The sides and the bottom of the bath are made of two thicknesses of 1 inch veneer and two thicknesses of compressed cork with an air space between the cork thicknesses. The inner lining, capping and corners are of stainless steel. The four outer sides are faced with white "Bakelite." The bath is supported by four marble blocks. This insulated construction is provided for the purpose of maintaining the temperature of the water. The firm claims that the temperature of the water mixture remains so constant that it will not vary to within 0.5 degree F., plus or minus, regardless of temperature or pressure changes in the hot or cold water supply lines. The hammock is constructed of 1¼ inch angle iron with adjustable shoulder and head rests, brazed on all joints. An adjustable tray in connection with this bath is connected to the side of the bath and may be set at any desired height or position, allowing the patient to eat or read while under treat-

ment. William J. Lang, Chicago. (Jour. A. M. A., September 10, 1932, p. 916)

Carrier Portable Room Cooler.—The purpose of the Carrier Portable Room Cooler is to reduce the temperature of a hospital, a home or an office room to comfortable summer temperatures. It consists essentially of a cabinet resembling an ice chest and is equipped with two small motor driven air blowers designed to draw the room air by and in the presence of melting ice. No difficult installation is required; the cooler is charged with ice, connected to a source of electric current. Ready for use. It is claimed that 300 pounds of ice will operate the cooler at full capacity under hot weather conditions for about five hours. It is also claimed that the Carrier Portable Room Cooler will serve as a therapeutic aid in a "hospital operating room or dispensary" and that it will "provide comfort in a small individual patient's room either in a hospital or private home." Carrier-York Corporation, Philadelphia. (Jour. A. M. A., September 17, 1932, p. 994)

Emerson Diaphragm Respirator.—The Emerson respirator is an apparatus for producing artificial respiration. The machine is driven by an alternating or a direct current motor; it may also be operated by hand. The body of the machine is a welded steel cylinder. Four windows made of cellulose acetate, "noninflammable" celluloid, are placed at advantageous points for observing the patient. Five portholes are located below the level of the windows for convenient care of the patient. Sponge rubber collars supplied with the respirator are thick and flexible, and, according to the manufacturer, are comfortable for the patient. The respirator bed may be raised or lowered to center the patient's neck in the rubber collar. The bed, equipped with a sponge rubber mattress, is flat at all times. A simple adjustment makes it possible to use either positive and negative pressure or negative pressure alone. The respirator is provided with a low pressure dial gage especially developed for this purpose. The infant model is similar in operation to the adult respirator. J. H. Emerson, Cambridge, Mass. (Jour. A. M. A., September 17, 1932, p. 995)

THE JOURNAL

OF

The Medical Association of The State of Alabama

Published Under the Auspices of the Board of Censors

Vol. 2, No. 5

Montgomery, Ala.

November 1932

BACTERIOPHAGE IN THE TREATMENT OF OSTEOMYELITIS AND OTHER WOUNDS*

FRED H. ALBEE, M. D.
New York

The late War did much to popularize the use of Carrel-Dakin irrigations and Bipp treatments in caring for infected wounds. Following this, maggots came into vogue. When one considers that a search for an ideal treatment for infected wounds has been going on practically for centuries, it seems scarcely possible that a method of wound treatment, which may completely revolutionize all our previous concepts, could be devised; yet, I believe the bacteriophage to be just such a method.

Osteomyelitis is one of the most common forms of bone infection encountered by the surgeon today. Nearly everyone is familiar with the treatment of this condition proposed by Dr. H. Winnett Orr in 1923. Apparently violating the traditions of free drainage, he packed the saucerized wound with vaseline and vaseline gauze and enclosed it in a plaster cast which was left undisturbed for weeks. Soon after operation the patient's temperature dropped to normal and, upon removal of the cast, the wound was found to be covered with healthy red granulation tissue. Orr explained this startling result on the basis of rest, immobilization, and avoidance of re-infection by repeated dressings.

However, this explanation did not seem to me to entirely account for the marked success of the treatment. After close observation of several cases, I became convinced that some unusual phenomenon was taking place. D'Herelle, the Yale bacteriologist, had in 1921 discovered an ultra-microscopic parasite which appeared spontaneously in a culture of dysentery bacilli

and destroyed them, thus in many instances saving the patient's life. This he called the *bacteriophage* because it lived on virulent pathogenic bacteria and completely lysed them.

In the mass of detailed bacteriologic findings which d'Herelle presented, two experiments struck me as having a definite similarity to what had happened in the Orr-treated wound, and to offer a possible explanation.

In one of his earliest experiments with dysentery bacilli he added about 0.0001 cc. of bacterial culture to a young broth culture and subcultured the mixture immediately to an agar slant. Ultimately the surface of the agar was well covered with a roughened layer of the multiplying bacteria. Then, after a long period of time, two little islands appeared, two clear plaques perfectly circular in form where the agar was bare, entirely free of all traces of the bacterial colony. D'Herelle explained this striking phenomenon by the spontaneous appearance of a bacteriophage which absolutely destroyed the bacteria with which it came in contact.

To prove this, his next step was to apply a platinum loop to the roughened surface of the agar and transfer a bit of the bacterial colony to a test tube of clear bouillon and incubate it. Within a short time, the tube was so teeming with bacteria that it was turbid and opaque. D'Herelle then transferred to this turbid culture an infinitesimal portion of one of the clear plaques on the agar slant. After a few hours, the bouillon, as if by magic, became perfectly clear and transparent, and centrifuging of the culture failed to disclose any bacteria whatsoever. Not only had all bacteria been killed but their bodies had been lysed or dissolved.

Now if a chemical germicide had been placed in this tube or heat applied, the bacteria would have been killed but at the bot-

*Read before the Association in annual session, Mobile, April 21, 1932.

tom of the tube there would have been the dead bacterial bodies. Not so in this tube of d'Herelle's. There was not a trace of sediment. Not a dead bacterial body was to be found.

Having observed this remarkable phenomenon in tube No. 1, d'Herelle took a second tube and repeated the process, except that he introduced the phage from tube No. 1 instead of from the agar slant. The result was the same—complete lysis of the bacterial bodies—showing that the phage had not lost its potency through lysing the bacteria in tube No. 1. He then took a third, fourth, fifth and even twentieth tube, in each instance transferring a bit of bacterial colony from the agar slant and incubating it; then when the tube was turbid with bacteria, dipping a platinum loop into the preceding tube and transferring a tiny portion of the fluid to the last tube. Each time there was the same evidence of the activity of the bacteria-destroying phage, striking proof that he was dealing with a living organism, capable of self-reproduction; for an enzyme or any non-multiplying agent would have lost its potency from extreme dilution long before it reached the twentieth tube.

D'Herelle further demonstrated by laboratory experiment that there were several varieties or "races" of phage for the various strains of each type of bacteria, but also having certain destructive influences upon other strains of bacteria.

The analogy to the bacteriophage-treated wound is obvious. When one closes up the wound with a paraffin-vaseline tampon and plaster cast, it is infected and discharging pus. When one removes the dressing eight weeks later, the wound is clean and healthy. Whatever agent clears out the offending infection appears spontaneously, as on d'Herelle's slant culture, for none has been introduced. And the long lapse of time, just as in his experiment, permits this agent to carry on its bacteria-destroying action to a successful end. Is it not logical to assume that the phage principle has been working in the wound, that a native bacteriophage has multiplied and become active under the long-continued dressing?

With this working hypothesis, I immediately proceeded to use this revolutionary

method in all cases of osteomyelitis, and by careful laboratory search and clinical tests, I established that, as I had assumed, a specific phage did appear spontaneously in about 94 per cent of cases of acute and chronic osteomyelitis.* In 3 of the remaining 6 per cent in which the phage does not appear spontaneously, the laboratory has been able to supply us with a phage specific for the organism in question. But in the other 3 per cent, it has, so far, been unable to do so. This is especially true of the *Streptococcus hemolyticus*, and in these cases we have adopted a policy of watchful waiting. In several instances, the desired phage has later appeared in the wound spontaneously and healing has occurred. It is hoped that with the perfection of laboratory methods and increased knowledge of the phage, it may be possible to isolate races of phage specific for each strain of bacteria in all cases.

In cases of osteomyelitis, both acute and chronic, I now make use of the following method of treatment. I do not use alcohol or iodine as Orr does lest they interfere either with the development of the spontaneous phage or with the specific laboratory-bred phage after its introduction. In precisely the same way the chemical spray does more damage to the beneficial parasite than to the pathogenic pest in the orange or grapefruit groves, and therefore should not be used. One of the orchard grower's problems is how to destroy the purple scale, which kills orange trees just as bacteria kill human tissues. There are open to him two methods of combat. He may spray his trees with a strong chemical which parallels the Carrel-Dakin treatment; or he may let a parasite fight the battle instead. This is the red-headed ray fungus, a parasite which exists in orange groves by eating the purple scale. The threads of the fungus penetrate the body of the scale and eventually kill it as well as the eggs it contains. If the fungus does not of itself arrive in the grove, the gardener may import it. For certain other pests, he may introduce lady beetles if they do not spontaneously appear, as they often do. Fruit growers now seldom spray trees with chemicals to destroy

*I am indebted to Dr. Ward MacNeal and Miss Marjorie Patterson of Post-Graduate Hospital for extensive help in this work.

certain pests if they can make use of a living parasite or natural enemy, for the latter method is much more reliable. In fact, some pests are completely resistant to chemical sprays and can only be eradicated by a natural enemy or parasite.

The treatment of a group of cases of osteomyelitis with complications, such as infected fractures, entails a multitude of considerations. In most of these cases, we have deep wounds extending into the bone, with varying degrees of infection. The ideal wound dressing must, therefore, have a degree of solidity sufficient to restrict the tendency of the orifice at the dermis to close earlier than the depths of the wound. At the same time, this tampon should be such that it can be inserted in practically a fluid state, in order to flow uninterruptedly to every recess of the wound; it should then become semi-solid, thus tending to conserve the original contour of the wound, avoid adherence to the bone, and, bit by bit, extrude automatically as granulations fill up the depths of the wound, or as the contractions of healing and cicatrization demand.

If the consistency of the tampon can be altered by changing the relative amounts of the ingredients composing it, too early extrusion can be avoided in wounds of great depth, and, conversely, rapid extrusion can be favored in shallow wounds where earlier closure is desirable and possible. With these requirements in mind, I am now using, instead of the vaseline and vaseline gauze applied in earlier cases, different mixtures of paraffin and yellow vaseline, the proportions depending on the nature of the wound. In deep wounds, paraffin and vaseline are used in a strength of 10 to 1; in suppurative wounds, where early closure is desired, the mixture is 4 parts of paraffin to 1 part of vaseline. The mixture is always put into the wound in a melted state, at about 110°F, this being accomplished by immersing the jar containing the mixture in a water bath for some time before the latter is used. It is then inserted into the wound by means of a large syringe.

I do not favor the vaseline-vaseline gauze dressing for several reasons:—

(a) It is impossible to satisfactorily control the consistency of the vaseline-vaseline gauze wound tampon. Due to the in-

gredients comprising it, this tampon cannot, at best, be uniform in its consistency.

(b) Later experience has shown that even when an excess of vaseline is added with the vaseline gauze, the gauze is still apt to become adherent to the bone at the bottom of the wound and so resist extrusion of the tampon and delay healing.

(c) The wound granulations are likely to strangle through the meshes of the gauze.

None of these complications ever arises with the paraffin and vaseline dressing, which, because of its proper degree of solidity for the particular case, the uniformity of its consistency, and its slippery surface, will always extrude much more satisfactorily than the vaseline-vaseline gauze dressing, acting in a manner apparently somewhat similar to the Bipp tampon. Furthermore, it has been found that the bacteriophage occurs spontaneously just as frequently as with the gauze dressing; also, the laboratory-bred phage, when introduced, acts as favorably. I have been unable to find any shortcomings of this dressing as compared with either the Bipp or the vaseline-vaseline gauze. Bipp, however, may be contraindicated because of the possible unfavorable chemical action of the iodoform upon the bacteriophage.

Technique: The usual sequestrectomy and saucerization are completed, and a culture is taken. (If a specific phage has already been found from a culture previously taken from an existing sinus, two-thirds of a test tube of this phage is poured into and over the wound, so that the whole surface is bathed.) The wound is then packed with a paraffin and vaseline mixture, usually 75 per cent paraffin to 25 per cent vaseline; or, in cases where the wound is deep and made through heavy muscles, 90 per cent paraffin to 10 per cent vaseline. No vaseline gauze whatsoever is used. The paraffin and vaseline are heated and poured in as a liquid, or forced in by pressure through a large syringe. In most cases, the syringe is the method of choice, in order to insure penetration of the mixture to the innermost recesses of the wound.

One end of a rubber catheter is inserted through the paraffin-vaseline wound tampon to the bottom of the bone cavity. The

other is allowed to project through the dressings and cast (which are applied as usual), with a sterile gauze or cotton over the end. If the laboratory examination of the culture reveals that it is possible to develop a bacteriophage specific for the organism presented, 10 cc. of this phage is injected through the rubber catheter once or twice a week. Care should be taken when making periodic injections not to infect or contaminate the end of the tube. Should the bacteriophage appear spontaneously in the wound, injection of the laboratory-bred phage is still of advantage in that it accentuates the action of the native phage, and may be a more specific one. This practice is of still further advantage because if an original phage does not completely destroy a culture, the organisms that survive give rise to a resistant strain which may be pathogenic for its host but is not affected by the old bacteriophage. In large wounds, several catheters may be inserted, some of which are multifenestrated. Inasmuch as the catheter is firmly imbedded in the paraffin-vaseline tampon, the injected phage fluid cannot flow backward between the catheter and the tampon. It must, therefore, make its way *inward* between the tampon and the wound granulations, and thus, by reason of its own bulk, spread widely. Furthermore, since the phage is, by nature, a multiplying organism, it will thus automatically spread over the wound surface.

At the end of eight weeks, the cast is removed and the wound dressed, great care being taken not to traumatize the granulating surfaces. The discharge around the edges of the wound is wiped off very gently with sterile gauze and the skin cleansed with benzene.

If the wound is not entirely healed when the cast is removed, it is again bathed with a test tube of the prepared specific phage fluid and a catheter or catheters inserted to the depths of the wound. A paraffin and vaseline tampon is used as before, and a cast applied for a period of eight weeks. A culture is also taken at this time to determine whether the bacterial flora of the wound has changed, and also whether a more specific race of phage can be obtained. Periodic injections through the catheter are given as before.

I have recently completed a statistical study of 100 consecutive cases treated by this method which shows that the average healing time for a case of osteomyelitis so treated is about 6 months. Three casts are applied at intervals of eight weeks, and, after removal of the third, weekly dry dressings are done until skin healing takes place. The type of infecting organism varies, staphylococcus, or a mixed infection with staphylococcus predominating, being the most frequent. It is interesting to note that the *Bacillus welchii* appeared in seven of the series of 100 cases. However, the rod was extremely weak and attenuated and did not interfere in any way with the healing of the wound. The flora changed in 22 per cent of the cases, usually to a more favorable type of organism, resulting in rapid healing.

Those cases in which a native phage develops usually do very well without the insertion of a laboratory-bred phage. However, in view of our latest investigations, we feel it is wise to inject periodically a race of phage of the highest potency, in order to have at work for a maximum period of time a phage of the highest specificity. In this way, any possible decrease in potency of the native phage is offset.

We have done extensive research to determine the relative effectiveness of plain and irradiated vaseline, and have established that there is no difference in their effect upon either bacterial cultures or different races of the bacteriophage. A resume of the experiments follows:—

- | | | |
|----------|---|---|
| 9- 7-31 | { | Staphylococcus broth cultures placed in contact with irradiated vaseline on petri dishes; cultured every 3 days for 4 weeks; all cultures grew in 24 hours. |
| 9-17-31 | | |
| 10-19-31 | | |
| 10-22-31 | { | Staphylococcus broth cultures placed in contact with plain vaseline on petri dishes; cultured every 3 days for 4 weeks; all cultures grew in 24 hours. |
| | | |
| | | |
| 12- 3-31 | | Four staphylococcus plates sealed with irradiated vaseline on opposite sides of petri dish (air space between culture and vaseline); cultured every week until 3-3-32; all cultures grew in 24 hours. |
| 2-27-32 | | Staphylococcus broth culture in contact with irradiated vaseline in petri dish; cultured every week until 4-11-32; all cultures grew in 24 hours. |

- 2-27-32.....*B. coli* broth culture in contact with irradiated vaseline in petri dish; cultured every week until 4-11-32; all cultures grew in 24 hours.
- 2-27-32.....*Streptococcus hemolyticus* broth culture in contact with irradiated vaseline in petri dish; cultured every week until 4-11-32; all cultures grew in 24 hours.
- 2-27-32.....*Staphylococcus* broth culture in contact with plain vaseline in petri dish; cultured every week until 4-11-32; all cultures grew in 24 hours.
- 2-27-32.....*B. coli* broth culture in contact with plain vaseline in petri dish; cultured every week until 4-11-32; all cultures grew in 24 hours.
- 2-27-32.....*Streptococcus hemolyticus* broth culture in contact with plain vaseline in petri dish; cultured every week until 4-11-32; all cultures grew in 24 hours.
- 9- 7-31 } Bacteriophage culture placed in contact with irradiated vaseline on petri dishes; tested every 3 days for 4 weeks for ability to lyse susceptible staphylococcus cultures; all bacteria completely destroyed in 24 hours.
- 9-17-31 } Bacteriophage broth cultures placed in contact with plain vaseline on petri dishes; tested every 3 days for 4 weeks for ability to lyse susceptible staphylococcus cultures; all bacteria completely destroyed in 24 hours.
- 10-19-31 } Bacteriophage broth cultures placed in contact with plain vaseline on petri dishes; tested every 3 days for 4 weeks for ability to lyse susceptible staphylococcus cultures; all bacteria completely destroyed in 24 hours.
- 10-22-31 } Bacteriophage broth cultures placed in contact with plain vaseline on petri dishes; tested every 3 days for 4 weeks for ability to lyse susceptible staphylococcus cultures; all bacteria completely destroyed in 24 hours.
- 2-27-32.....Bacteriophage broth solution put into well in large tube of irradiated vaseline; tested for ability to lyse staphylococcus culture every week until 4-11-32; culture of staphylococcus completely destroyed in 24 hours.
- 2-27-32.....Bacteriophage solution put into well in large tube of sterile vaseline; tested for ability to lyse staphylococcus culture every week until 4-11-32; culture of staphylococcus completely destroyed in 24 hours.
- 4-11-32.....Irradiated vaseline in contact with photographic film for 48 hours; did not fog the film.

Conclusion:.....No difference was noted in the effect of the irradiated and the plain vaseline upon the bacterial cultures and the bacteriophage.

My experience with this new method for treating osteomyelitis has convinced me that it is far superior to any other method I have used, and this conviction is borne out by the statistical study which shows the time of healing materially reduced. A

summary of the advantages of the dressing follows:—

1. It is simple in its application, requiring a minimum amount of labor on the part of the surgeon and his staff.

2. It does not interfere with the immobilization of the part (as, for example, in the case of a compound infected fracture or suppurating joint) nor does it favor edema of the granulations or the soft structures because of inequality of pressure at or in the immediate neighborhood of the wound, since there is no window in the cast. This is quite contrary to the Carrel-Dakin or maggot method of treatment both of which must, of necessity, have a window in the cast. I believe that uniform pressure over the wound and neighboring tissue (such as this method affords) will avoid exuberant granulations and edema, an important consideration in the healing of a wound, as is exemplified in the case of varicose ulcers.

3. The paraffin-vaseline tampon automatically yields to the encroachment of granulation, healing, and closure of the wound, thus gradually extruding and keeping up a constant physiologic pressure upon the surface of the wound at all times. This is more effective than frequent dressings by the surgeon, and, in addition, avoids the possibility of re-infecting the wound by a foreign flora of bacteria.

4. This dressing is favorable to the appearance of the native bacteriophage and to the periodic introduction of a laboratory-bred phage.

5. It requires a very short period of hospitalization.

In addition to its application to infected bone wounds, the bacteriophage has proved a most efficacious specific agent in combating such lesions as furuncles, boils, carbuncles, and phlegmons. For these conditions it may be applied in two ways:—(1) thoroughly rubbed over the surface of the wound and the lesion covered by sterile pads soaked in bacteriophage; or, if the lesion is of extensive size or depth, it may be dressed with the paraffin-vaseline tampon with a catheter incorporated for periodic introduction of bacteriophage; (2) it may be injected subcutaneously into the soft parts by means of a hypodermic needle about the periphery of the lesion.

In bacteremia, particularly *Staphylococcus aureus*, a bacteriophage prepared with asparagin as a medium and injected into the blood stream, has, in the hands of Dr. McNeal,¹ reduced the mortality from practically 100 per cent to less than 50 per cent, even when there have been two positive blood cultures. Not only is the bacteriophage a successful local therapeutic agent, but it has the added advantage of helping to establish a possible general immunity on the part of the patient. Also, the bacteriophage is, to some degree, effective in experimental animals when injected at a site distant from the infected focus.

The invariable excellence of the results of this new method of treatment for infected wounds should make it unquestionably preferred by all those who experience its advantages over former methods. I believe that the bacteriophage will eventually become one of the surgeon's important weapons against infection. Its potency has become so widely recognized that certain governments (India and Brazil) have passed laws that it be kept constantly on hand for use in certain intestinal diseases. My desire is to stimulate the interest of the surgical world in a phase of bacteriology which will have a profound influence on the future treatment of surgical infections.

TABLE

Average Healing Time ²	6 months
Average Number of Cast Dressings.....	3
Average Number of Weekly Dressings.....	3
(to complete skin healing)	
Appearance of Bacteriophage	
Spontaneous	94%
Introduced	3%
Type of Infecting Organism	
Staphylococcus	40%
Streptococcus	15%
Mixed	
Staphylococcus predominating	38%
Streptococcus predominating	15%
Tuberculosis	2%
<i>B. welchii</i>	7%
(present with other organisms)	
Flora Changed During Treatment.....	22%
(usually to a more favorable type of organism, resulting in rapid healing.)	

¹New York Post-Graduate Hospital.²Based on a series of 100 consecutive cases.

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PROGRESS IN THE TREATMENT
OF TUBERCULOSIS*

L. J. MOORMAN, M. D.
Oklahoma City, Oklahoma

My friend, Dr. Henry Boswell, who has done so much creditable work in the State of Mississippi, and who immediately preceded me on this program, has clearly stated many principles which have a definite bearing upon my subject.

Tuberculosis of the lungs is among the first diseases recorded in the history of medicine. However, because of its ubiquitous nature, its protean manifestations and its obstinate course, usually with ultimate disaster, the medical profession acquired toward it a fatalistic attitude. Naturally such an attitude was not conducive to progress in the diagnosis and treatment of the disease. On the contrary, it resulted in a horizontal drift which was not definitely interrupted until the epoch-making work of Laennec in the first quarter of the nineteenth century, which made possible the recognition of pulmonary tuberculosis, the classification of its various forms, and facilitated its differentiation from other pulmonary conditions.

This sharp awakening, accompanied by unprecedented diagnostic achievements, was soon to be followed by significant ther-

*Read before the Association in annual session, Mobile, April 21, 1932.

apeutic advances sponsored by Brehmer, Dettweiler, and Trudeau, resulting in our present sanatorium regimen. This ascending interest in tuberculosis culminated in Koch's discovery of the tubercle bacillus in 1882 and his announcement of tuberculin in 1890. These two events caused a furor throughout the medical world.

With the specific cause determined, it was thought that preventive measures should soon prove effective. With tuberculin recommended as a diagnostic agent, a means of determining activity or quiescence, and a curative agent, we were temporarily occupied with the hope that humanity's greatest scourge might soon be brought under control. From this high peak we were doomed to descend, though the settling point remained far above the level upon which Laennec's investigations were based. The residue contained many valuable epidemiologic, diagnostic and therapeutic principles. The diagnostic use of the x-ray was soon to be added. The growing interest in sanatorium management led to valuable clinical studies and the accumulation of statistical data, resulting in the conviction that early diagnosis and early management were the most important factors in the cure of pulmonary tuberculosis.

Rest soon became the dominant feature in the management, and the treatment of minimal and moderately advanced cases was pursued with enthusiasm. Unfortunately there was little to offer the more advanced cases until it was observed that nature pointed the way toward further therapeutic advances. The demonstrable limitation of expansion of the diseased lung through increased muscle tension and partial fixation of the thorax suggested the possible value of local rest. Forlanini conceived the idea of artificial pneumothorax as a means of securing local rest through collapse of the lung. During the last two decades surgical collapse, including artificial pneumothorax, has become recognized as a valuable adjunct in the treatment of pulmonary tuberculosis. It has proved a great boon to those suffering from advanced disease, offering a chance of recovery in many cases otherwise considered hopeless.

The surgical measures usually employed are (1) artificial pneumothorax, (2) intra-

pleural pneumolysis, (3) phrenicectomy, and (4) thoracoplasty. Since the main object in employing any one of these measures is to secure collapse of the lung, it is easy to see that under certain conditions a combination of two or more of the above surgical procedures may be necessary in order to obtain satisfactory results.

Artificial Pneumothorax. Artificial pneumothorax should be considered in the treatment of any case of pulmonary tuberculosis not responding, after a reasonable time, to routine rest, hygienic and dietetic treatment. This is true regardless of the question of unilateral or bilateral involvement. If the case is a bilateral one and the lung showing the greater amount of involvement is collapsed, the contralateral lung may show improvement as pneumothorax progresses. If this does not follow or if the disease in the contralateral lung progresses, simultaneous bilateral pneumothorax may be indicated.

Intrapleural Pneumolysis. In case it is found impossible to secure satisfactory collapse because of adhesions, intrapleural pneumolysis should be considered. If adhesions are not too extensive and if it can be determined that the adhesive bands do not contain lung tissue or large blood vessels, it is safe to employ the cautery with a view of severing the adhesions, thus releasing the tension on the lung and permitting more satisfactory collapse. In this way it is often possible to bring about the closure of large cavities and to favor healing by placing the surrounding diseased lung tissue at rest.

Phrenicectomy. Removal of the phrenic nerve is indicated in cases where artificial pneumothorax is impossible because of extensive adhesions or where partial or incomplete artificial pneumothorax has failed because of adhesions not suitable for cauterization. Often the elevation and fixation of the diaphragm resulting from phrenicectomy will be sufficient to effect the desired results. This is particularly true in cases where phrenicectomy is employed as an adjunct to artificial pneumothorax. Phrenicectomy is also indicated as a preliminary step in cases requiring thoracoplasty. We have been surprised to find that phrenicectomy in some cases slated for thoracoplasty has resulted in

such marked improvement the latter was deemed unnecessary. In any event, it is usually safe to assume that phrenicectomy will place the patient in better condition for major surgery and prove a valuable adjunct in ultimately bringing about the desired therapeutic results.

Thoracoplasty. If the above surgical procedures employed alone or in combination fail to bring about satisfactory collapse, thoracoplasty may be successfully employed. For the benefit of those who may question the advisability of such a radical procedure, may I say it is surprising how well tuberculous patients tolerate major surgery, especially if it is skilfully applied with careful attention to anesthesia.

The results to be expected from the above therapeutic measures are partially illustrated by the following cuts.



Figure 1

Figure No. 1 represents the x-ray findings in a young woman who entered the Farm Sanatorium with the clinical manifestations of an acute pulmonary condition. Pulmonary abscess was considered as a possibility. In the meantime, tubercle bacilli were found in the sputum and the x-ray revealed a large cavity with a fluid level situated in the upper lobe of the right lung. There was also some infiltration about the hilum on the left. After a few weeks observation, artificial pneumothorax was recommended. As may be seen by inspection of the second film in Figure No. 1, after six months pneumothorax treatment, the cavity was completely closed and the slight infiltration in the midzone of the left lung was clearing. The cough and sputum were greatly reduced and no tubercle bacilli were found.

Figure No. 2 simply serves to show how simultaneous bilateral pneumothorax may

be employed in the treatment of advanced bilateral pulmonary tuberculosis. This represents a case of rather acute progressive disease in which simultaneous bilateral pneumothorax resulted in marked symptomatic relief. However, death soon closed the scene because of bilateral spontaneous pneumothorax. We have successfully employed this method of treatment in many more favorable cases. This picture is particularly interesting in that it affords a beautiful example of selective collapse in the first film, right upper lobe. The left lung was later collapsed because of advancing disease. Cavities in the upper left are held open by band-like adhesions (see second film, Figure No. 2).

Figure No. 3, intrapleural pneumolysis, shows the results of artificial pneumothorax supplemented by cauterization of ad-



Figure 2

hesions in a young man suffering from bilateral pulmonary tuberculosis. The first film reveals about fifty per cent collapse on the right with large cavities in the upper lobe of the right held open by band-like adhesions extending from the visceral to the parietal pleura. These adhesions are rendering collapse incomplete and interfering with the closure of cavities. The second film, made ten days after intrapleural pneumolysis, shows the prompt closure of cavities after the adhesions were cauterized. The accumulation of fluid as seen in this film is common after such an operation.

Figure No. 4, Phrenicectomy. This picture shows x-ray films in the case of a young woman who was diagnosed as having pulmonary tuberculosis with a cavity below the right clavicle. This is clearly shown in the first film. The second film shows the cavity disappearing. This pic-

ture was made only one month after phrenicectomy. Note the high position of the right diaphragm in the second film. Phrenicectomy is particularly indicated in basal lesions; however, it often seems to exert a favorable influence even in apical lesions as shown in this case.

Figure No. 5, Thoracoplasty. This picture shows chest films of a young woman who was suffering from advanced bilateral pulmonary tuberculosis predominating in the left lung. Artificial pneumothorax could not be employed because of extensive adhesions. Before these pictures were

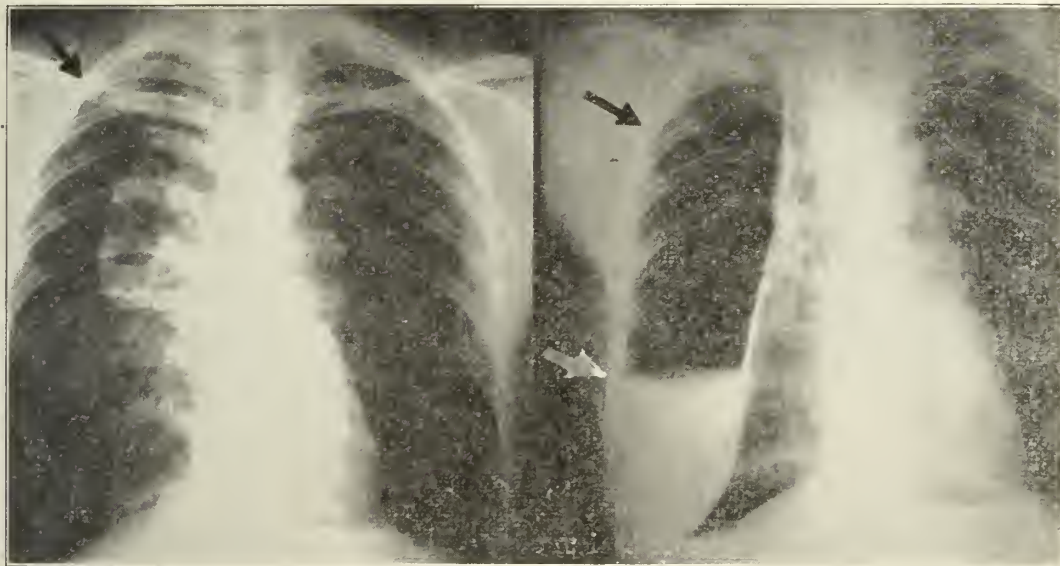


Figure 3

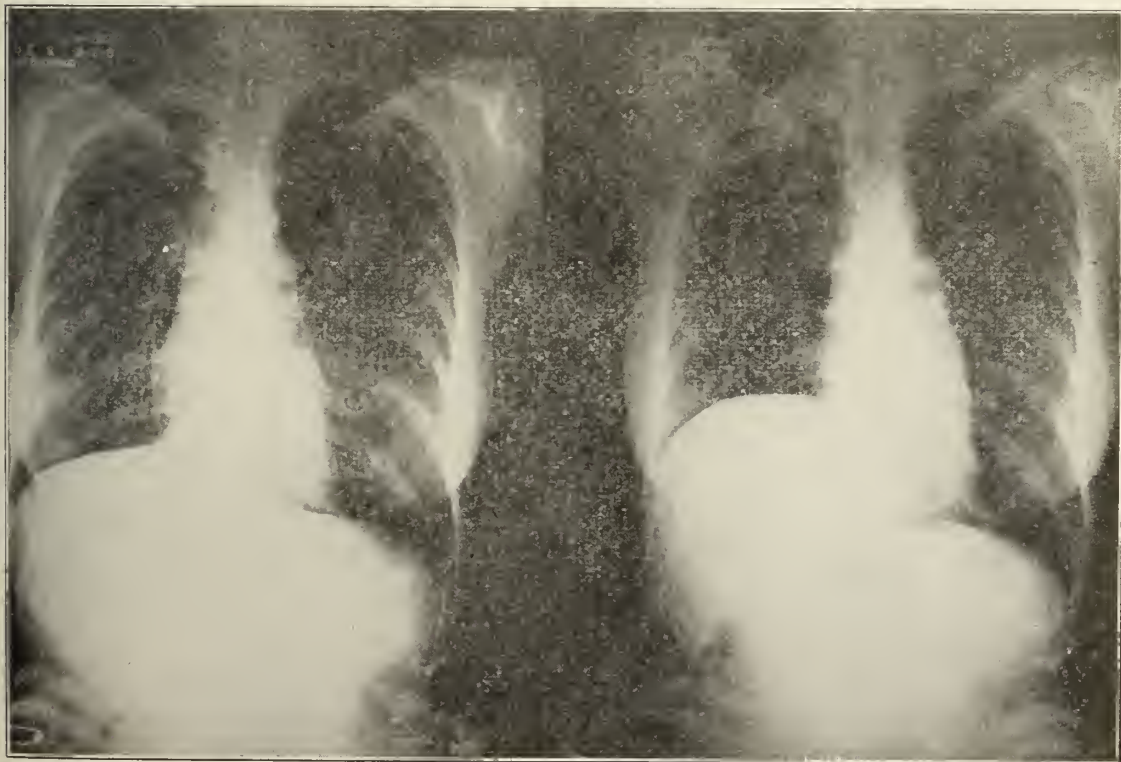


Figure 4

made she had had phrenicectomy and thoracoplasty on the left. The marked contraction of the left thorax, which is quite obvious, resulted in the closure of multiple cavities with great benefit to the patient. Later the right phrenic nerve was removed because of a flare in the upper lobe of the right. A recent stereoscopic picture of the

in a given case decide that some form of surgical collapse is indicated in that it may aid in the closure of a cavity or in supplying additional rest to a diseased area. At the same time, he realizes that surgery is to be considered only as an incident or an additional step in the treatment of his case

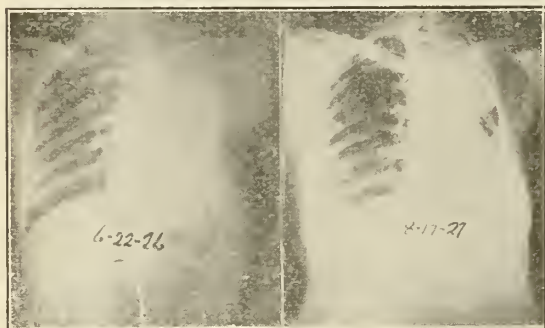


Figure 5

chest indicates a remarkably good condition considering the battles which have been waged.

Figure No. 6 (same as Fig. No. 5) shows the field of operation and the surprising lack of deformity when compared with the contracted thorax as shown by the x-ray of the chest.

In closing this discussion, may I call attention to the fact that while we should continue to place emphasis upon early diagnosis and prompt treatment, we now have a ray of hope for the advanced consumptive. Under present methods of treatment it becomes our duty to see that every case of advanced pulmonary tuberculosis has a thorough diagnostic study with a view of determining whether or not some form of collapse therapy may be advantageously employed. In some cases therapeutic indications are well defined; in others a decision is often most difficult and calls for continued observation, preferably in an institution where repeated examinations may be had with fine discrimination with reference to location, character, extent and comparative age of lesions, also the relative condition of the two lungs.

The above criteria should serve as a warning against promiscuous chest surgery. A case of pulmonary tuberculosis never becomes purely a surgical problem. The wise clinician or phthisiotherapist may



Figure 6

and if properly employed it usually falls between long periods of careful study and faithful management.

With these facts in mind, it readily appears that here is the prime indication for the closest cooperation between clinician and surgeon. With few exceptions, if the case is to be wisely handled, the surgical indications are to be found intimately bound up in the clinician's accumulated knowledge of the case.

Before taking my seat, may I say that for the success of the major surgical procedures here reported, I am indebted to Dr. Horace Reed of Oklahoma City, who possesses in rare degree the necessary qualifications of a good chest surgeon.

When a fistula has persisted for an indefinite period of time it usually means that there is some form of obstruction in the urethra, and the fistula will close as soon as this obstruction is removed. They persist because the resistance to the outflow of urine is less through the fistulous tract than it is through the urethra or the constant seepage of urine through the tracts perpetuates the infection by irritation and keeps them from closing; both factors may be responsible in keeping the tract open. In cases of ureteral or renal fistulas diversion of the urine is accomplished by the ureteral retention catheter or frequent dilatation of the ureter.—Mallard, Texas State Journal of Medicine, October 1932.

DIAGNOSIS AND OFFICE MANAGEMENT OF COMMONLY NEGLECTED GYNECOLOGIC CONDITIONS*

THOS. BENTON SELLERS, M. D., F. A. C. S.

Chief of the Department of Obstetrics and Gynecology, Southern Baptist Hospital, New Orleans;
Assistant Professor of Gynecology, Postgraduate School of Medicine, Tulane University
New Orleans

In presenting this subject, I make no pretense of offering you new gynecologic methods; I wish only to emphasize, from seventeen years' experience in gynecologic work, some of the common causes of incorrect diagnosis and ineffective treatment. In a discussion of this type, it will be necessary for me to rehearse some of the fundamentals of gynecologic technique because, in my opinion, oversight of basic details, or complete neglect of them, is responsible for much unsuccessful work in this field. The most helpful modalities and agents are sometimes discarded simply because improper attention to details has made them appear useless.

History: A detailed history, carefully taken and intelligently interpreted, is indispensable to correct gynecologic diagnosis.

Pelvic Examination: The lighting arrangement is of first importance in the pelvic examination. If one depends upon natural light, the examining table must be placed in such relation to the window as to allow maximum benefit from it. More practical than natural light is a strong daylight globe equipped with a reflector and a gooseneck stand.

A careful inspection of the external genitalia should precede any attempt at internal examination, with special notice of the type of discharge, and with a detailed and careful inspection of the urethral orifice, including especially Skene's glands, located just inside the meatus. In the presence of discharge from the urethra, the vagina, or the cervix, two smears should be taken from each before the bimanual examination is made.

A routine examination with the bivalve speculum is indispensable to an intelligent gynecologic study. Yet, in taking histories, I have found a large number of women who

state that they have never been subjected to instrumental examination.

A bimanual examination is made after first having gained the confidence of the patient, thus securing her cooperation. The examination may be rendered inaccurate by a full bladder; for this reason, it is desirable to catheterize the patient whenever it is possible to do so under aseptic conditions.

The rectal examination is of distinctive diagnostic importance. It supplies special information as to the condition of the sacro-uterine ligaments, assists in locating the position of pelvic tumors, if they are present, and permits thorough examination of the rectovaginal wall.

Many gynecologic conditions will respond to office therapy, the success of the various measures, depending, of course, upon correct diagnosis and the proper selection of the therapeutic agent. We shall now discuss some of the more commonly neglected conditions.

Urethritis: The examination of the urethra consists of inspection, palpation, and microscopic examination of the secretion. Urethral caruncles are often the cause of much discomfort. They may be hidden within the urinary meatus and become visible only upon instrumental examination. Stricture of the urethra is more prevalent in women than is generally supposed. In view of this fact, we use routinely Walther's dilating catheters in treating all bladder conditions. We endeavor to gradually dilate the urethra up to 30 mm., according to the French scale before discharging the patient. In cases in which the urethra is thickened, we massage the urethra while the catheter or urethral dilator is in place. Prior to inserting this dilating sound or catheter, the urethra is cocainized by means of a cotton swab saturated in from five to ten per cent cocaine solution or some other local analgesic agent.

Skene's glands require special treatment and should be inspected in every case of urethritis and vaginitis. These glands are best exposed by means of bent hairpins held in artery forceps and used as a speculum, according to the method of Kelly. There are two methods of treating infected Skene's glands: injection of an antiseptic solution, such as two to ten per cent silver nitrate, through a probe-pointed hypoder-

*Read before the Association in annual session, Mobile, April 20, 1932.

mic needle; and destruction of the gland by thermocauterization, electrocoagulation, or excision, one of the latter methods being the treatment of choice. Practice will enable one to locate the outlets of the ducts. In cauterization, a fine cautery point is introduced into the duct, the current turned on, and the duct slit upward into the urethral floor. In electrocoagulation, a small pointed electrode is inserted into the opening, the current turned on with the foot switch and the glands destroyed, a white area around the electrode denoting the destruction. In excision, the ducts are threaded on the blunt end of a small intestinal needle, and the mucosa is incised and dissected away from the ducts with fine scissors, according to the technique of Curtis.

Trichomonas Vaginalis Vaginitis: In some cases, a definite vaginitis may be produced by the trichomonas vaginalis. The clinical significance of the trichomonas is a comparatively recent discovery. Pathologists formerly felt that it was a harmless parasitic host of the vagina and not the actual cause of the vaginitis. Careful research, however, has convinced them that the organism has pathogenic properties.

The presence of the organism can usually be detected from the appearance of the discharge, but should always be verified by microscopic examination. The discharge is characteristically "a profuse, foamy, purulent, yellow material; the vulva is inflamed; and speculum examination reveals a highly injected vaginal and cervical mucosa with bright or dark red punctate mottling and a lake of secretion in the posterior fornix."¹ The discharge is often of long duration and irritating in character. The living trichomonas is easily seen when a drop of the secretion is mixed with an equal amount of normal saline solution, placed on a hanging drop slide, and examined under the microscope. It is recognized by its characteristic shape and its flagellate motion.

Various methods of treatment have been advocated, but all are of essentially the same type. I personally use the one outlined by Dr. Bland of Philadelphia which is as follows: the anal region, vulva and vagina are thoroughly cleansed with tincture of green soap, followed by sterile wa-

ter; the parts are carefully dried with small cotton pledgets; the vagina and vaginal vault are swabbed with a saturated aqueous solution of picric acid (1%), the open speculum being withdrawn gradually so as to obliterate the vaginal folds and allow painting of the crevices; the vulva and anal region are painted with picric acid; the vaginal vault is ballooned out, and purified kaolin powder is introduced to serve as a drying agent. The patient is then instructed to take iodine or 0.5% lactic acid douches twice daily for two weeks, the iodine being used for non-pregnant and the lactic acid for pregnant patients. Office treatment should be repeated every third day. The essential feature of this process is the mechanical cleansing, and successful treatment depends to a large extent upon this one factor. It is also important that the vaginal walls be kept apart, either by means of a drying powder, or by Lasser's paste applied on a cotton or wool tampon.

It is urgent that we recognize the presence of trichomonas infection. Before we realized that trichomonas infection is productive of leucorrhea, most gynecologists felt that the discharge was due to endocervicitis and did repeated cauterizations, at times destroying not only the endocervical glands, but also the cervical musculature, occasionally causing sterility, and in the case of pregnancy, making childbirth difficult. In addition to this, the irritation and discomfort caused by the infection are at times so severe as to be almost unbearable. Also, puerperal morbidity, according to the studies made by Dr. Bland, is considerably higher in women who have this infection prior to delivery than in those who do not. He feels that this is another reason why infected patients should receive prompt and vigorous treatment, repeated if necessary, to rid them of the infection.

Senile Vaginitis: Senile vaginitis is characterized by the formation of adhesions resulting in destruction of the protective epithelium. A thin, acrid discharge is present and is likely to cause irritation of the external genitals. Pure pyroligneous acid is considered a specific treatment for this condition. One to two tablespoonfuls are applied through a tubular speculum, the acid being kept in contact with the mucosa for several minutes by the motion of the

instrument up and down. After the acid is removed, the vagina is dried, the vulva is painted with silver nitrate, and the outlet of the vagina and the vulva covered with Lasser's paste, which consists of 2 per cent salicylic acid, 24 per cent starch, 24 per cent zinc oxide, and 50 per cent liquid petrolatum. This treatment gives prompt relief, but the condition may recur, making it necessary to repeat the treatments at a later date.

Cervical Conditions: Cervical conditions, for our purpose, may be discussed under the following classification: recent laceration without erosion, laceration with eversion (at times associated with erosion), simple erosion, cystic cervicitis (nabothian cysts), and endocervicitis. It is unnecessary to burden you with the details of the histopathological classifications of conditions produced by laceration and infection.

The treatment of recent lacerations without erosion usually consists of light strokes with the thermal cautery, the extent of cauterization depending entirely upon the depth of the lacerations.

In lacerated cervixes with erosion the technique of Roblee and Royston has been most effective in the cases in which I have used it. "A v-shaped incision is made with the thermal cautery, the point of the 'v' being made to extend from $\frac{1}{2}$ to 1 cm. farther up in the cervical canal than the apex of the laceration."⁸ The eroded area is not treated until after the cauterized tissue has had an opportunity to heal. One treatment is often sufficient for healing both laceration and erosion. This procedure is applicable to moderate lacerations; more extensive lacerations require surgical treatment. If surgery is indicated, it should be performed early in order to avoid extensive involvement of the endocervical glands.

Simple erosion will also respond to light strokes with the cautery in the four quadrants of the cervix. One treatment is usually successful, though it is occasionally necessary to repeat the procedure.

Cystic cervicitis is often associated with endocervicitis. The nabothian cysts (cystic cervicitis) are simply punctured or opened with a sharp pointed cautery.

Endocervicitis is particularly significant because it is capable of causing many con-

stitutional symptoms. Discharge, backache, pains in the lower abdomen, mental depression, extreme nervousness, dysuria, metrorrhagia, dysmenorrhea, pruritus, headache, sterility, menorrhagia, dyspareunia, frigidity, or any constitutional symptom of focal infection, may result. The most prominent symptom is intermenstrual leucorrhea, the discharge being more profuse just before and just after the menstrual period. The pains in the lower abdomen may be due to pelvic cellulitis, subacute salpingitis, endometritis, or myometritis.

It is not possible to outline one method of handling chronic endocervicitis. Each case must be individualized, the essential factor being the complete destruction of the infected endocervical glands. We recommend for this purpose cauterization or conization of the infected glands with the high frequency current or the radio knife. In extensively infected cases the Sturmdorf amputation is indicated.

If the thermal cautery is used, it is important to estimate the depth of the infection in order that the infected tissues may be entirely destroyed. If only the lower portion of an infected gland is cauterized and the upper part remains as it is, the outlet of the cervix may present a healthy appearance and yet the diseased tissue higher in the canal cause a continuation of the patient's symptoms. Another danger is overcauterization, with the possibility of a cervical stricture as its result. It is preferable to cauterize only the four quadrants at the first treatment, recauterizing later if necessary.

Conization removes not only the diseased glands but also the tissue in which they are imbedded, the underlying muscles not being injured by the process. The technique of conization may be acquired with ease by the practitioner. With the patient in the lithotomy position and the cervix well exposed by a bivalve speculum, the tissues of the vagina and cervix are cleansed and thoroughly dried. A strong solution of novocaine, about 50 per cent, or 10 to 15 per cent aqueous solution of cocaine is applied in the cervical canal by means of an applicator. The inactive electrode is placed on the abdomen or under the hips of the patient, the other electrode is held about $\frac{1}{8}$ of an inch from the cervix until the spark

shows that contact has been established, the electrode is inserted into the cervical canal up to the internal os; and with a rotary motion the cervical glands are reamed out. If the cervix is unusually large and thick and the desired depth is not secured, it may be necessary to repeat the reaming process at the same sitting. A light packing is placed against the cervix to control the slight oozing which may occur.

Following cauterization or conization an irritating watery discharge appears and may later become bloody. The patient should be warned to expect this discharge in order to avoid needless worry and fear. She should also be informed that from three to four weeks are required for the completion of the healing process and about six weeks for maximum beneficial effects. No cleansing douches are permitted for the first ten days after the treatment.

In deciding to use cauterization and coagulation we must keep in mind several contraindications, namely: pregnancy or questionable pregnancy; acute or subacute infection of the cervix or adnexa; and suspicious cancer cases, especially between the ages of 38 and 50 (biopsy should precede cauterization or electrocoagulation in these). It is also preferable not to administer these treatments within a few days before or after menstruation.

Conization offers to us several advantages which are peculiar to it. The treatment can be given in the office by any trained gynecologist with very little discomfort to the patient, no loss of time, and relatively little expense; the symptoms are completely relieved with a minimum of scar tissue, the cervix remaining functionally normal; and the heat generated during the process assures complete asepsis. A sealing of the draining lymphatics, which is very desirable, also takes place. In addition to this, the cervical artery is located high up near the internal os and there is no danger of injuring it during intelligent conization. The procedure may be repeated as often as necessary without injury to the tissue.

Gynecological Uses of the Galvanic Current: In cases of cervical stenosis, ante-flexion, or uterine hypoplasia, the galvanic current is of great value. The negative pole promotes glandular secretion, relaxes

the muscle fibre, and stimulates circulatory activity. An insulated copper cervical electrode is inserted into the cervix and connected to the negative pole. The other electrode is placed on the lower abdomen. From 6 to 12 milliamperes are given for fifteen minutes.

The galvanic current, combined with general hygienic measures, appropriate outdoor exercise, and selected muscular exercises will relieve a large percentage of the dysmenorrhea cases in which there is no pathological background.

Some men advocate following the above procedure with the sinusoidal current. This I have had no experience with and shall not attempt to discuss.

Retrodisplacements: In the management of recent postpartum retroversion of the uterus, the pessary has a distinct use. The Smith pessary is preferable. Select the proper size by measuring on the fingers the distance between the posterior fornix and the inner border of the pubis. Holding the narrower or vaginal end of the pessary, introduce it transversely, tilting it if necessary as it goes into the vagina. With the index finger, guide and place the posterior bar beneath the cervix and well up into the posterior fornix. The pessary draws the cervix backward and throws the fundus forward through pressure on the utero-sacral ligaments. When the pessary is properly placed, its greater curve is upward behind the cervix and the lesser curve downward and away from the symphysis pubis. This use of the pessary applies only to retroversion following childbirth and is not applicable to congenital retroversion.

The pessary is also of value as a diagnostic agent. In the presence of symptoms referable to displacement, the uterus is replaced and a pessary fitted. If the symptoms disappear, we are assured that a correction of the displacement by operative measures will relieve the condition permanently. If the pessary fails to give any relief, we must look elsewhere for the cause of the symptoms.

Pessaries are also indicated for first degree procidentia, for poor surgical risks, and for persons strongly opposed to surgery.

The pessary has its limitations. As stated, results are most gratifying in cases

of postpartum retroversions with good pelvic floor, but in cases in which the pelvic outlet has been damaged extensively, the pessary seldom offers a permanent cure. It is not designed to replace surgery in this class of cases.

The uterus must be replaced *before* the pessary is inserted because the pessary is not capable of correcting a retroversion, but only of supporting the uterus in its proper position. If the uterus cannot be replaced, the pessary is definitely contraindicated. Other contraindications to the use of the pessary are: pelvic or vaginal inflammation; the presence of prolapsed tubes and ovaries; and malpositions caused by tumors and cysts.

Certain helpful facts should be kept in mind, namely: the knee-chest position and the kangaroo walk greatly aid the work of the pessary; the pessary should not press against the vaginal walls; a warm cleansing douche should be advised every day, except during menstruation; the pessary should be examined two weeks after it is first inserted; and each six weeks after that, it should be removed, cleansed, and replaced. Above all, a pessary which causes pain should never be allowed to remain in place.

As formerly stated, many of the most common gynecologic conditions can be successfully treated in the office by the gynecologist or by the trained practitioner. In order to alleviate as much suffering and eliminate as much loss of time as possible, let us not overlook nor neglect the smallest detail which will add effectiveness to our methods of treatment.

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DISCUSSION

Dr. T. B. Hubbard (Montgomery): I think we all appreciate a practical paper such as this brought by Dr. Sellers. It is to call attention to one or two things he passed over lightly that I want to speak for a minute. I feel that most of us, after we get busy in life, want to make a thorough examination of our patients as soon as we can get to them. For that reason, in making a gynecologic examination, it is our desire to do as many things as we can at one time. Dr. Sellers spoke of catheterizing the patient before examination. I have for years made it a practice to have a sterile catheter ready when I make an examination. This enables me not only to empty the bladder but also to procure a needed specimen for examination. It is well for all of us to keep a sterile catheter ready and to catheterize our patients uniformly. There is no danger of infection unless we see pus or gonorrhea.

Rectal examination, too, should not be neglected. Last week I had a young woman who came complaining of menorrhagia. When I examined the rectum, I found she had a rectal stricture about two inches up which would not admit a pencil. That was by far the most serious of her troubles. It is my custom to do a rectal examination as a routine procedure. In that way little things that cause trouble are found. One of these is fissure.

Dr. Sellers has omitted entirely, in speaking of examination, reference to the knee-chest position. I think we should use the knee-chest position in examining our patients. Also, in the same way, you treat cases like these old chronic cases of vaginitis; you have the vagina ballooned out, and naturally you can use any kind of application you want in the vagina.

In treating Skene's duct, the doctor mentioned the use of a needle. I have for a long time used a little method that I picked up somewhere. If you take a little sealing wax, and heat it and put it around the point of the needle, a little back from the point of it, it will make a nice bead there and you put the needle in and block up the duct.

In regard to cauterization, I have practically given up most of the amputations and old operations on the cervix since I have been using the cautery.

I would like to ask Dr. Sellers what kind of results he gets from novocaine put in the cervix. Cocaine is a very dangerous anesthetic. I have had one death from cocaine in the urethra and I shall never use it again. I do suggest, and use in most cases like that where a mild anesthetic is needed, sacral anesthesia, which is a perfectly simple procedure.

In using a cautery, I would suggest that lots of times the continued use of the heat is the thing the patient complains of. If you will make frequent applications so the heat in the vagina is not noticeable, they do not complain of it very much.

Dr. A. L. Stabler (Birmingham): I would like to state that since I began complete routine examinations, I have been amazed at the number of latent cases of genito-urinary infection I have found. It is also amazing how difficult it is to get them well.

In that connection I would like to ask Dr. Sellers to elaborate a little more definitely on his technique of anesthesia in electrocoagulation of caruncles. Just how much trouble there is in voiding and how long it takes them to get well. Personally my electrocoagulations of urethral caruncles have been a little severe for the patient.

In regard to the use of galvanism in the cervix, if there is any suspicion of, or possible pregnancy, beware of danger; you will have an abortion if you use galvanism in the cervix of a pregnant uterus.

Dr. Gilbert F. Douglas (Birmingham): I feel we are to be congratulated on having Dr. Sellers bring us the type paper that he has this morning; certainly it is one of the most practical papers we have had. Regardless of the type of medicine we are doing, we are confronted with these pelvic conditions and should know about them, if for no other reason than to take the proper diagnostic care that has to be exercised.

I want to mention the question of cystitis, which is purely a gynecologic condition to be treated by the gynecologist or the general man who is treating pelvic conditions in women.

We see many patients who come in with pain, complaining of a bearing down sensation in the lower pelvis and about the vagina. Without proper examination we immediately "dub" them as having some uterine or tubal condition. However, if we will take the trouble to get a catheterized specimen, or do a cystoscopic examination—if such be necessary—we will find there is a cystitis present which is accounting for all of the supposed pelvic symptoms which the patient has. Many of these cases have been operated on—having tubes removed, ovaries destroyed, and at times hysterectomies—without any relief whatever, for the reason that diagnosis was not made of the bladder irritation. Were this diagnosed properly and treated, by the palliative and simpler methods of irrigation and the instillation of antiseptics into the bladder, it would have cleared up soon.

Another thing is the rectal examination. I feel no patient should be operated on for pelvic conditions without having a rectal examination made. A great many of these cases have a proctitis or inflammation of the rectum without any symptoms other than the bearing down sensation. If we attempt to do pelvic surgery or other type of treatment, we will find that in the end, the patient is no better and we are very much humiliated. I want to thank Dr. Sellers and again express my appreciation for his splendid presentation on this subject.

(Continued on page 213)

EARLY PIONEERS IN OPHTHALMOLOGY IN AMERICA*

CHARLES A. THIGPEN, A. M., M. D.
Montgomery

The earliest pioneers in ophthalmology in America were not ophthalmologists, and the earliest contributor, Benjamin Franklin, was not a physician. History records this important event in 1774 when he invented his bifocal spectacles, a description of which he gives best in his own words: "I am happy in the invention of double spectacles, which, serving for distant objects as well as near ones, make my eyes as useful as ever they were. I had two pairs of spectacles, which I shifted occasionally, as in travelling I sometimes read and often wanted to regard the prospects. Finding the change troublesome and not always sufficiently ready, I had the glasses cut and half of each kind associated in the same circle. By this means, as I wear my spectacles constantly, I have only to move my eyes up or down, as I want to see distinctly far and near, the proper glass always being ready. If all other defects and infirmities were so easily and cheaply remedied, it would be worth while for friends to live a great deal longer." Benjamin Franklin was born in Boston, January 17, 1706 and died in Philadelphia, April 17, 1790.

The next individual to contribute to American ophthalmology was Elisha North, a native of Connecticut. He established at New London, Conn., in 1817 the first eye infirmary in America. George Frick of Baltimore published the first book on ophthalmology in America and was probably the first teacher, and was awarded the title of "Father of Ophthalmology in America". A treatise on diseases of the eye, including doctrines and practice of the most eminent modern surgeons, particularly Beer, was the only book he ever wrote.

Edward Delafield, a distinguished obstetrician and pediatricist, devoted much time and attention to ophthalmology. In conjunction with Doctor John Kearney Rogers he organized in 1820 the New York Eye Infirmary.

*Read before the Association in annual session, Mobile, April 21, 1932.

One of his contemporaries was Isaac Hays, surgeon and ophthalmologist of Philadelphia. He reported the first case of astigmatism in America and the fifth in all the world. He was also the first to report a case of pathologic color blindness in America.

Another of the early pioneers in Philadelphia was Philip Syng Physic, renowned as a cataract and artificial pupil operator. He was the first man to invent the tonsillotome. He died in 1837.

Another prominent surgeon and ophthalmologist was William Gibson, born in Baltimore in 1788. He was the first to perform the strabismus operation which was done in 1818 but no public record was made of it. Dieffenbach performed the same operation in 1839, published an account of it and gained the priority.

William Horner, born in Virginia in 1793, was the first to dissect the muscle which bears his name, Horner's muscle—the tensor tarsi.

Edward Reynolds, a famous Boston surgeon, gave special attention to ophthalmology and was one of the founders of the Massachusetts Charitable Eye and Ear Infirmary. He studied for some time in London and Paris. Returning to Boston, he found his father blind from cataract. History does not record who performed the first cataract operation in America, but Boston claims the honor for Edward Reynolds who describes the operation on his father in the following words: "I went into my closet, and offered a prayer to the Deity for success, took a glass of sherry and went ahead to do my best". Both eyes were operated upon at one sitting. The operation was a success. This made his reputation, the first cataract operation performed in America. He died in 1881.

Doctor John Jeffries, another noted Boston surgeon did brilliant work in ophthalmology and he with Doctor Edward Reynolds founded a dispensary for diseases of the eye, ear, nose and throat, which later became the present Massachusetts Charitable Eye and Ear Infirmary.

Squier Littell, who contributed no little to ophthalmology, was born at Burlington, N. J., in 1803, practiced in Philadelphia, published a "Manual of Diseases of the Eye" and died in 1886.

The great American surgeon, Samuel D. Gross, was a skillful operator upon the eye and wrote for his graduating thesis "The Nature and Treatment of Cataract".

Another of the more prominent pioneers was Joseph Leconte, who contributed his well-known volume "Sight" to ophthalmology. Born in 1823, he graduated at the College of Physicians and Surgeons, New York, and located at Macon, Georgia.

We have now arrived at an era when ophthalmology in America saw the light of a new dawn, the day when Henry Willard Williams and Elkanah Williams appeared upon the scene. These two great pioneers accomplished in their time more than all others who had gone before them and gave an impetus to ophthalmology in America which carried it into the foremost ranks of the various departments of medicine. Henry Willard Williams was a New Englander. Born in Boston December 18, 1821, he received his education at Harvard; also his medical degree in 1849.

In 1850, he delivered a course of clinical lectures to a class at Harvard on diseases of the eye, the first clinical course given in America on the subject. He was one of the founders of the American Ophthalmological Society and a long time president.

Elkanah Williams was born in Lawrence County, Indiana, December 19, 1822. He received his medical education at the University of Louisville and located at Cincinnati in 1852 for the practice of general medicine and surgery, at the same time giving special attention to diseases of the eye, ear, nose and throat. Being ambitious to further his studies, he went to Europe and began at once the study of ophthalmology and otolaryngology with the leading specialists in Paris. Later he went to London and was one of the few students at the great Moorfield's Hospital. There he came in contact with Sir William Bowman, Dixon, Wordsworth, and the elder Critchett, and there it was said he demonstrated for the first time, in London, the use of the ophthalmoscope which he acquired in Paris, and which he brought to America later, the first to be introduced into this country. After leaving London, he studied in Prague, Berlin and Vienna. In 1855 he returned to Cincinnati where he began the practice of ophthalmology and otolaryngology exclu-

sively. He was the first to deliver a course of didactic lectures on ophthalmology and otolaryngology at the Miami Medical College in Cincinnati, where the first chair of ophthalmology was established in 1860. He contributed much to ophthalmology and was the first president of the International Ophthalmological Congress in 1876. He died in 1888.

Coming now to more recent times, when we can give some personal recollection of the more famous men, we find them well distributed throughout the United States of America.

In Boston, the outstanding man of this later period was Doctor Haskett Derby, born in Boston June 29, 1835, educated at Harvard and the Universities of Vienna and Berlin, in which latter city he had the good fortune of attending the clinic of Albrecht Von Graefe, who left a lasting impression on his life. Returning to Boston in 1861, he immediately began practice in that city where he became nationally and internationally known and was one of the founders of the American Ophthalmological Society and was at one time its president. He was for many years consulting surgeon to the Massachusetts Charitable Eye and Ear Infirmary and founded the eye clinic at the Carney Hospital in 1887. He contributed considerably to the literature of ophthalmology both in this country and Europe. He died August 21, 1914.

In New York we find a trio of great men whose work and influence have had perhaps more effect in the development of ophthalmology in America than any other three men. Among these three was Cornelius Rea Agnew, born in New York, August 8, 1830, and graduated from the College of Physicians and Surgeons in 1852. He located at Houghton, Mich., where he practiced general medicine and surgery, devoting much attention to ophthalmology and otolaryngology. Three years later he returned to New York and was appointed surgeon to the New York Eye and Ear Infirmary, at the same time he did a general medical and surgical practice. Realizing that he could not properly carry on his work in both, he decided to devote himself exclusively to ophthalmology and otolaryngology, and went to Europe where he remained some time, studying under William

Wilde, William Bowman, Geo. Critchett, and others, later going to Paris. Returning to New York, he devoted his practice exclusively to ophthalmology and otolaryngology. He very soon became known far and wide because of his great ability both as clinician and skillful operator. Doctor Agnew was a man of great executive ability. In 1866, he established a clinic for eye, ear, nose and throat diseases at the College of Physicians and Surgeons, and later was elected clinical professor of these specialties in this institution which he continued until he died. He promoted and established the Brooklyn Eye and Ear Hospital, and later, the Manhattan Eye and Ear Hospital on the staff of which he remained until his death. He was one of the founders of the American Ophthalmological Society. His contributions to ophthalmic literature were many and he devised many useful ophthalmic instruments. He died April 18, 1888, aged 58 years, long before his time.

Another of this remarkable trio was Henry D. Noyes, one of the founders, also, of the American Ophthalmological Society, and the author of one of the greatest textbooks on ophthalmology. A man of great judgment and operative skill, born in New York City in 1832, educated at New York University, received his medical degree from the College of Physicians and Surgeons. After graduating from college, he spent four years in training in ophthalmology and otolaryngology, a portion of which time was in Europe. Returning to New York he entered at once upon the practice of these specialties. He was elected professor of clinical ophthalmology and otolaryngology at Bellevue Hospital Medical College, which he continued until 1900, when he died, one of the greatest contributors to ophthalmology of his time.

The last of this great trio, and, to the mind of the writer the greatest, was Hermann Knapp, born in Dawborn, Germany in 1832. He received his medical degree at the University of Giessen in 1854. Afterwards, he studied ophthalmology and otolaryngology at Paris, London, Utrecht, and Heidelberg. At the latter city he was assistant to Albrecht Von Graefe. He was a private teacher of ophthalmology, and later became professor of ophthalmology and

founder of the eye clinic at the University of Heidelberg. Possessed of great ambition and longing for a wider field, he came to America and located in New York City. There he founded the New York Ophthalmic and Aural Institute, now the Knapp Memorial Hospital, the finest ophthalmic hospital in America. In 1868 he founded the Archives of Ophthalmology and Otolology which some time afterward became separate journals, far surpassing any periodicals yet published in the United States in these specialties. He was professor of ophthalmology in the University of the City of New York and later occupied the same chair in the College of Physicians and Surgeons, being the medical department of Columbia University, which he continued until 1903. He was an inventor of many useful eye instruments and made many contributions to ophthalmic and otologic literature, probably more than any man in America before or after his time. He was of a scientific turn of mind as well as being one of the foremost clinicians of his day, and a wonderful teacher. The writer remembers with everlasting gratitude his kindness and teaching during his early days in his studies in ophthalmology.

He was a very skillful operator and was noted for his brilliant results in cataract operations. He was a believer in the simple extraction and never cut the iris in an uncomplicated cataract at the time of the operation, always delaying it until the following day in case of prolapse.

"The character of Hermann Knapp was free from envy and jealousy and yet competition from Agnew at the Manhattan Eye and Ear Hospital and Noyes at the New York Eye and Ear Infirmary was keen. No one can appraise the enthusiastic and inestimable services he rendered for so long as a teacher and a developer of ophthalmology. Though he is gone, his influence still lingers and widens as the years pass by". He died May 1, 1911 from pneumonia, aged 79 years.

A fitting memorial was established by the Section on Ophthalmology known as "The Hermann Knapp Testimonial Fund". "This fund is raised by voluntary contributions from the members of the section. This fund each year supplies an honorarium to any member of the section or any dis-

tinguished man who comes before the section, as its guest, by special invitation of the officers and executive committee and presents an especially meritorious and valuable address bearing upon ophthalmologic practice or principles of value."

Much more could be said about the life and accomplishments of this great man, but we shall have to hurry on to Philadelphia where we find Harlan, William Thompson, William F. Norris and S. Weir Mitchell. Mitchell was the first American to realize the intimate association between ophthalmology and neurology. Though not an ophthalmologist, but a close observing neurologist, he attributed many obscure neuroses and head pains to eyestrain and muscle imbalance. This observation of S. Weir Mitchell was of far-reaching importance and opened up a large and new field for the expansion of ophthalmology in its relation to general medicine, and thus began the systematic ophthalmic examinations, put into practice in Philadelphia by Weir Mitchell and Wm. F. Norris, to be followed promptly at other clinics, notably Osler's clinics at Johns Hopkins.

Reviewing the early workers in ophthalmology in Chicago, we shall mention only those whose works lived after them. Doctor Edward Lorenzo Holmes, the founder of the Illinois Eye and Ear Infirmary, was professor of ophthalmology in the Rush Medical College, and was interested in everything that was uplifting in the medical profession. He died in 1900 after a long life of usefulness to the people and his profession. Another of like prominence was Joseph Hildreth born in 1832. He was founder of the Cook County Hospital and the first professor of ophthalmology in the Chicago Medical College. Among the several other famous ophthalmologists of that time in Chicago were Doctor Ferdinand C. Hotz, Doctor Henry Gradle, and Borne Bettman. All three were outstanding ophthalmologists and left their imprint indelibly marked upon this department of medicine.

Travelling further westward, we find John Green, Charles Michel, Pollak, and Post, the pioneers of their day in St. Louis. It is to be regretted that time will not permit a tribute to each of these.

Of more personal interest to us, here assembled today, are the pioneers of ophthalmology in the South.

They were but few but their work has left an influence on ophthalmology in the South which will never die away. First among these was James Bolton, born at Savannah, Ga., June 5, 1812. He received his degree as Bachelor of Arts at Columbia in 1831, graduated from the College of Physicians and Surgeons, New York in 1836, and, turning to ophthalmology, became a pupil of Doctor James Kearny Rogers, one of the founders of the New York Eye and Ear Infirmary. He practiced at Richmond, Va., until the beginning of the War between the States, when he entered the Confederate Army as a surgeon.

After the War he returned to Richmond and resumed practice but did not live long, dying May 15, 1869. In 1843 he published a "Treatise on Strabismus."

The second man of great importance in ophthalmology in the South was Julian J. Chisholm, born in Charleston, S. C., in 1830. He studied medicine at the Medical College of South Carolina. After graduating, he went to Europe to further his studies, returning later to practice, in Charleston, general medicine and surgery. He also gave special attention to diseases of the eye, ear, nose and throat. When the War broke out he entered the service of the Confederacy and was a surgeon in the army.

In the words of Doctor Howard A. Kelly, "Doctor Chisholm's personality was distinctly that of the old-fashioned Southern gentleman, gracious and extremely courteous, and at the same time wise in his specialty". He removed to Baltimore in 1869 and devoted his practice exclusively to ophthalmology and otolaryngology and became professor of diseases of the eye, ear, nose and throat in the University of Maryland.

In 1873 he founded the Presbyterian Eye, Ear and Throat Hospital in Baltimore, an institution which has had a distinguished career of usefulness ever since that time. Doctor Chisholm died in the year 1904. He served, perhaps, more people than any other one man of his time in his specialty.

A personality of no less importance appeared a few years later in Doctor Abner W. Calhoun who was born at Newnan, Ga., April 16, 1846. His father was Doctor An-

drew B. Calhoun, a prominent Southern physician of that day. When Doctor Calhoun was only fifteen years of age, the War between the States began, consequently his early education was interrupted. He joined the army and was the youngest member of his company. He served throughout the War and was one of those who surrendered with Lee at Appomattox. Returning home, he took up his education again and later studied medicine at the Jefferson Medical College, graduating 1869. After graduating, he practiced a few years with his father, at Newnan, Ga., general medicine and surgery. Later, he went to Europe where he studied for some time the specialties in which he was later to become famous throughout the South. He located at Atlanta where he at once built up a very large practice, commanding patronage from the entire South. No man served the people more devotedly and conscientiously and no man of his time was more beloved. Rich and poor flocked to him, and he knew no difference when it came to dispensing his skill and kindness. He was active in college work and was elected to the chair of ophthalmology and otolaryngology in the Atlanta Medical College which he served for many years. He wrote but little and held but few offices in medical associations. He was a man of fine personality and great energy. He was interested in young men and was instrumental in training many; the fact that any young man had been trained by Doctor Calhoun was sufficient recommendation for him. Many years ago he called attention of the public to the injurious effect of tobacco on the optic nerve and in later years associated cataract in children with hookworm. He died in 1910.

Of the dead, only, have I spoken. It is not fitting to eulogize the living, but I cannot let this occasion pass, the day which the Medical Association of the State of Alabama dedicates to the Section on Ophthalmology and Otolaryngology, without paying a tribute to the one and only pioneer in ophthalmology in Alabama, Doctor Benjamin James Baldwin.*

Doctor Baldwin was born in Bullock County, Alabama, November 16, 1856. His early education was gained in the country

*Since the reading of this paper, Dr. Baldwin has died.

schools in Bullock County, Montgomery, and later at the Randolph-Macon College in Virginia.

In 1874 he began the study of medicine in Montgomery under the preceptorship of that beloved and unique character, Doctor R. F. Michel. The rules relating to the study of medicine at that time required the student to spend one year studying medicine under the direction of a practicing physician. Happy was the boy who had the opportunity to sit with that rare old gentleman of the Old School, Doctor Michel. The writer's acquaintance with Doctor Michel sealed a friendship which can never fade away.

Another guardian of Doctor Baldwin was his uncle, Doctor William Owen Baldwin, who helped to shape his destiny. Doctor William Owen Baldwin was the first physician in America to discover the toxic effects of quinine on the optic nerve. This observation was made in 1847 and was the beginning of a series of experiments in producing quinine amblyopia. Doctor William Owen Baldwin was the first Southern physician to be elected president of the American Medical Association.

To return to the subject of our sketch: Doctor Benjamin James Baldwin graduated from the Bellevue Hospital Medical College in New York in 1877. His first medical work was as interne in the New York Hospital for Mental Diseases. After a year's service there, he was appointed interne on the Staff of Charity Hospital, Blackwell's Island, New York City. Following a year's service there, he located at Louisville, Ky., where he began the practice of general medicine. He became an instructor and assistant to the chair of medicine in the University of Louisville Medical College. After practicing three years in Louisville, he returned to New York for the study of the diseases of the eye, ear, nose and throat. He became resident house surgeon in the Manhattan Eye and Ear Hospital where the leading surgeons, the distinguished Cornelius R. Agnew, D. B. St. John Roosa, and David Webster were on its staff. After serving two years there, he went to Europe, visiting the clinics of London, Paris, Berlin and Vienna, in order to better prepare himself for the practice of ophthalmology and otolaryngology

at Montgomery where he located in 1883. Here, he entered into his work with much enthusiasm and very soon he had gained the confidence of the profession and the people and built up a very large practice. Having at his command such a vast territory, he gained a very large and valuable experience, drawing his work from the several Southern States, which served him well in developing his natural talents as a diagnostician and operator, in both of which he excelled. He took a great deal of interest in the Montgomery County Medical and Surgical Society and the State Medical Association, contributing a number of writings and papers. One of the most notable at that time was "Headache and Neuralgia Due to Errors of Refraction", about which little had been written in the South. A number of other valuable contributions to ophthalmology and otolaryngology in Alabama were made by him. One especially valuable was "the results of his experience in cataract operations." It will be of much interest to you to know that Doctor Baldwin was the first to establish in the South a private hospital for the treatment of diseases of the eye, ear, nose and throat. This proved a great blessing to both rich and poor and was a step further than any other ophthalmologist had gone and must be considered a very valuable contribution to this work in Alabama and all the South.

In 1890, at the meeting of this Association in Huntsville, just forty-four years ago, Doctor Baldwin was unanimously elected president. His administration was marked by most progressive ideas. Afterward, he served for two terms on the Board of Censors with Doctor Jerome Cochran.

January 1, 1893 was a great event in the life of the writer. On that day he became associated with Doctor Baldwin in the practice of ophthalmology and otolaryngology and it is needless to say that this event had a great deal to do with shaping his future life. This association was the inspiration which developed lofty ideals in his life, and even if these have not been achieved, he will ever dream them, and be grateful for the influence and wise counsel of this great man.

It was a sad day for him when these relations and associations had to be severed

because of a serious illness of Doctor Baldwin, which left his health much impaired and prohibited him from continuing the work he dearly loved and for which he gave the best of his life.

Much of this paper has been compiled from the works of Alvin Hubbel in his "History of Ophthalmology in America", and the writings of Thos. H. Shastid, the assistance of which is hereby acknowledged and without which this paper could not have been prepared. Many names have been passed over for lack of time, some of which played important parts in the development of the ophthalmology of today.

POSTPARTUM HEMORRHAGE CAUSED BY UTERINE RELAXATION*

F. M. T. TANKERSLEY, A. B., M. D.
Montgomery

Most of us who do obstetrics fear two conditions, hemorrhage and infection. The success that one has in dealing with postpartum hemorrhage depends upon one's ability to ascertain the cause of the hemorrhage, and upon acting quickly to remedy the cause. Time is a most important factor.

Let us consider some of the general remarks found in the literature upon hemorrhage caused by uterine relaxation. Dr. James Reinberger of Memphis says, "Uterine atony is by far the most important and causes more hemorrhage than all the other causes of postpartum hemorrhage combined".¹ Dr. A. M. Mendenhall of Indianapolis states that "hemorrhage is the third greatest cause of obstetrical mortality, being exceeded only by toxemia and possible sepsis. True postpartum hemorrhage is due to atony of the uterus; the uterus has failed to contract properly, or to remain properly contracted with a resulting soft, flabby uterus which bleeds rapidly in large amounts. This usually occurs in the first hour after delivery and may be rapidly fatal".² Dr. Bethel Soloman of Ireland makes this comment: "We have been asked when one may cease to fear postpartum hemorrhage; generally speaking, two or three hours may be taken as the limit—we have had occasion to treat them later."³

*Read before the Association in annual session, Mobile, April 21, 1932.

Uterine relaxation is caused by a lack of tone in the muscles of the uterus, resulting in an inability of the muscles to contract properly, thereby allowing bleeding to occur at the placental site. Among the causes may be mentioned (1) an overdistention of the uterus, as in twins or hydramnios; (2) the anemic type of woman; (3) placenta praevia; (4) fibroids; (5) profound anesthesias; (6) hasty deliveries, as version and precipitate labor; (7) multiparity; (8) constitutional diseases, as cardiorenal; (9) a distended bladder; and (10) faulty management of the third stage of labor.

POSTPARTUM HEMORRHAGE BEFORE PLACENTAL DELIVERY

Bleeding is usually due either to lacerated tissues of the birth canal or uterine relaxation. If it is caused by lacerations, the uterus is well contracted and the source of the bleeding can be found by vaginal examinations. A speculum can be introduced into the vagina to locate lacerations of the cervix or of the anterior vaginal wall. When the bleeding is caused by relaxation, "the uterus is soft, the fundus is high and indistinct on palpation, and pressure increases the bleeding."⁴ This increase in bleeding is more apparent than real; it is an expulsion of accumulated blood in the uterus.

Treatment Before Placental Delivery

Prophylactic: "The smallest loss of blood will result in those cases where the cord is clamped close to the vulva, and no uterine manipulation whatsoever is employed to express the placenta until the signs of placental separation appear."⁵ The signs that result from placental separation are (1) the descent of the cord; (2) the appearance of vaginal bleeding; and (3) the rise of the fundus. One should wait for these signs to appear before the use of the Crede maneuver. After placental separation takes place, or during its expulsion, an ampule of pituitrin should be given intramuscularly.

Active treatment: When vaginal bleeding appears before the placenta is expelled, which is not caused by laceration, the Crede maneuver should be employed. If this fails, and if the hemorrhage is a copious one, administer one cc. of pituitrin. If the hemorrhage continues manual extraction should be resorted to; always bearing in mind the

danger of carrying infection into the uterine cavity.

POSTPARTUM HEMORRHAGE AFTER PLACENTAL DELIVERY

The bleeding is usually due either to uterine relaxation or to retained portions of the placenta. The placenta should be examined carefully following its delivery to make sure there are no retained cotyledons. "In hemorrhage due to primary atony there is a continuous flow of blood which may be so abundant as to cause death within a very few minutes,"⁶ or "the loss of blood occurs into a distended uterus, and the first sign may be pallor and a collapse of the patient. On pressing down the fundus a large flow of blood occurs from the vagina."⁷

Treatment After Placental Delivery

Prophylactic: In those cases that have a tendency toward bleeding after the delivery of the placenta, close attention should be given the pulse, carefully watching for any signs of hemorrhage. The fundus should be held for at least one hour. One teaspoonful of the fluid extract of ergot should be given by mouth every four hours for six doses.

Active Treatment: (1) Massage of the fundus. (2) Pituitrin and ergatole, intramuscularly. (3) Insert one hand in the vagina; with the other hand on the fundus, compress the uterus between them. (4) When these efforts fail, pack the uterus and vagina with sterile gauze.

GENERAL TREATMENT OF HEMORRHAGE

Immediate: (1) Lower patient's head and provide additional blankets and hot water bottles. (2) Oxygen. (3) Saline hypodermoclysis. (4) Glucose infusions. (5) Caffeine sodium benzoate and camphor in oil, intramuscularly.

Later: 1. Abdominal binder. 2. Force liquids by mouth. 3. Rectal instillations—250 cc. of warm tap water. 4. Repeat saline hypodermoclysis and glucose infusion if necessary. 5. Transfusions.

POSTPARTUM HEMORRHAGE SEVERAL DAYS OR WEEKS AFTER PLACENTAL DELIVERY

It is interesting to note the report of three cases of postpartum hemorrhage at intervals from ten days to six weeks after delivery.⁸ Each was found to have a retrodisplacement. In cases of a return of the lochia, the explanation usually proved to be a retroverted uterus, and the retroversion was due to a lack of tone of the uterine

muscle. This condition was probably due to an interference of the uterine circulation, causing an incomplete involution.

Treatment: This consists of a very careful curettage, and the use of pessaries to support the retroverted uterus.

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ALLERGY IN CHILDREN WITH PARTICULAR REFERENCE TO FOOD IDIOSYNCRASY*

REPORT OF CASES

J. H. BAUMHAUER, M. D.
Mobile

Allergy is the occurrence of peculiar symptoms, the result of reactions against foreign substances or physical agents that are harmless to the great majority of normal individuals.¹ Allergy in children may be hereditary or acquired. In the hereditary type there is transmitted the tendency to allergic manifestations of some sort, but not necessarily to any special foreign substance to which the parents may react. Many infants are sensitive to foods with which they have never come in contact but which have formed a part of the mother's diet. In the acquired type there are no symptoms on the first ingestion of, or contact with, the foreign substance. The sensitiveness develops only on later exposures.

Allergy may occur in the human subject through:

1. Contact of the unbroken or broken skin or mucous membrane with plants or animal hair.
2. The injection under the skin or into the circulation of the blood or serum from other animals.

*Read before the Association in annual session, Mobile, April 21, 1932.

3. The inhalation of plant pollens or other products of vegetation.
4. The ingestion of a great variety of proteins contained in animal and vegetable foodstuffs, especially milk, egg, and beef.

In infancy the commonest allergic agents are breast milk and cow's milk. When marked hypersensitiveness to milk, be it human or cow's, exists, the ingestion of even a small quantity of it may result in immediate projectile vomiting, swelling of the mucous membrane, with sneezing and watering of the eyes, erythema or urticaria, and in some instances dyspnea and shock. All sensitive infants will not react so acutely. In some infants idiosyncrasy to milk or other substances results only in occasional vomiting, loss of appetite, diarrhea, fever, and varied skin conditions, notably urticaria and eczema. These children do not seem to thrive, and usually when seen have been tried on many different formulae with poor or indifferent results. Similar symptoms occur with hypersensitiveness to other food substances; and it is possible that certain more or less chronic gastro-intestinal symptoms, especially if associated with urticarial rashes, are allergic in nature. Some investigators² are of the opinion that in some cases abdominal colic in newborn babies can only be explained upon an allergic basis. They recommend skin tests, together with a careful family history, in order to eliminate the possibility of milk idiosyncrasy.

Allergy to pollens and other vegetable matter, animal hairs, and emanations, also bacteria, usually results in hay-fever and asthma. Time will not permit a discussion of this here. It may be said, however, that hay-fever is frequently dependent upon pollens; asthma upon pollens, animal emanations or hairs; and gastro-intestinal and cutaneous symptoms upon ingested animal or vegetable substances. It is this latter class that we will discuss in this paper.

DIAGNOSIS OF FOOD ALLERGY

According to Rowe^{3,4}, food allergy should be considered as a possible cause of symptoms:

1. Where the patient has symptoms or manifestations which have been

shown to be due at times to food allergy.

2. When symptoms exist which cannot be explained by any examinations or tests. This is especially true in patients who have family or personal histories suggestive of allergy, such as eczema, hay-fever, or urticaria, although allergic manifestations do occur without such positive histories.

It should be stated that negative skin tests do not always rule out food sensitization. In such cases diagnosis may be made with Rowe's elimination diets.³ Such diets may also be used for diagnosis where skin tests cannot be carried out.

VALUE OF SKIN TESTS

The normal frequency in children of positive response to cutaneous tests, yet without clinical evidence of allergy, is from 10-15%. In subjects with asthma and eczema, positive cutaneous response to one or more proteins is found in from 35-70%, about one-half of these children showing clinical improvement when the offending proteins are eliminated from the diet. Dale and Thornburg⁵ state that food allergies can be determined definitely in that way, while other investigators^{6,7} have reported cases of food allergy in which one or more proteins giving negative skin reactions were responsible for the symptoms.

Duke⁸ states that a patient is not made ill by all the foods to which he is actually sensitive and to which he may give positive skin tests.

TECHNIC OF SKIN TESTS

The scratch or cutaneous method is used because of its ease and the absence of severe reactions, as compared with the intradermal method.

The skin is thoroughly cleansed with alcohol and ether, and using an ordinary needle, holding it nearly parallel to the skin, a small linear scratch about one-eighth inch long is made, avoiding drawing blood. A drop of n/10 sodium hydrate is placed on the scarified area. A small amount of the protein (about as much as can be taken on the end of a tooth pick) is gently rubbed into the scarified area. These tests should be made in a direction parallel to the axis of the limb at right angles to the lines of cleavage of the skin to allow for gapping.⁹

In young children or babies the skin of the back may be used instead of the skin of the extremities. The tests are spaced about $\frac{3}{4}$ to 1 inch apart, and not in direct vertical lines, to allow proper lymph drainage. A control test is made for each series of tests using only sodium hydrate solution on the linear scratch. A positive reaction appears in 5 or 10 minutes and persists for about 30 minutes. It consists of an urticarial wheal 5 mm. in diameter. Sometimes only a large erythematous area is noted.

TREATMENT OF FOOD IDIOSYNCRASY

The simplest and best method of treatment is to avoid substances that offend. If this is done it is not unusual to find that idiosyncrasy has ceased after several months. Thus, if we find in our investigation that tomatoes when ingested give the child abdominal pain and urticaria, it is a simple matter to drop this article from the diet for several months and give the system an opportunity to throw off the sensitiveness to this particular food. In cow's milk or mother's milk idiosyncrasy Mead's "Sobee" (a soy bean flour, olive oil, edible corn starch, sodium chloride, and dicalcium phosphate mixture) is of value. This food was developed by Hill and Stuart¹⁰ and contains sufficient food value to maintain bodily functions for an indefinite period.

"Sobee" is indicated in cases of eczema from milk protein sensitization, or other forms of milk idiosyncrasy. Cod liver oil and orange juice should be supplemented to supply the antiricketic and antiscorbutic vitamins. Soy bean is rich in vitamin B. Hill states, however, that this preparation is not entirely satisfactory and that he has used it in many cases in which not the slightest benefit was obtained by its use. Some children are able to tolerate it well for a long period of time, while others apparently develop a sensitivity to it after it has been given for several weeks. This idiosyncrasy may be due to the barley or some other constituent.

The substitution of some other protein in the diet may be successful at times. Thus, human milk or goat's milk may often be taken without symptoms, in place of cow's milk. In some cases such a simple procedure as drying or boiling the milk may be all that is necessary. Milk boiled from one

to six hours has been recommended. This prolonged boiling evidently kills the irritating agent in the milk.¹¹ Recently the S. M. A. Corporation has put on the market "hypo-allergic whole milk and hypo-allergic skim milk." These products are prepared by being subjected to prolonged heat treatment, which is designed to bring about deep-seated changes in the proteins responsible for milk allergy.

It has been noted many times that food taken in large quantities or by itself will produce symptoms of allergy, whereas it is ineffective when taken in small amounts or with some other foods. Thus, a small amount of milk, preferably dried, is mixed thoroughly with cereal and the mixture is well cooked in water and served without additional milk. This method, at times, gives brilliant results.

Sometimes it is possible to render patients tolerant of foods to which they are sensitive. This may be done by feeding a minute quantity of the offending substance and daily increasing the amount ingested.

Elimination diets have been proposed by Rowe³ and used successfully by Dale and Thornburg⁵. These investigators have noted the offending substances in many hundreds of cases of food idiosyncrasy and have included in their allergic diet lists only those foods never causing allergic symptoms or those infrequently causing them. They have attempted to balance the diets properly with "non-allergic" producing foods, and should diet 1 not prove satisfactory the patient may be shifted to diet 2 etc., until no symptoms are noted.

Another method of treatment used with some success is to start the patient on a milk diet and then, if there are no symptoms, to add one "non-allergic" food at a time at intervals of 48-72 hours. This method of treatment has proved very successful in some cases.

It is interesting to note that patients are rarely sensitive to the more commonly eaten foods. They are, however, frequently sensitive to foods which are rarely taken¹². Therefore, in planning diets in which there is a suspicion of food idiosyncrasy, it is always advisable to include only those foods that are frequently eaten by the patient and which apparently do not cause symptoms.

In gastro-intestinal allergy, peptone, calcium, quartz light therapy and colonic irrigations have been used with poor or indifferent result. Some investigators claim excellent results with one or more of these methods, while others claim little or no benefit from them.

The method of treatment to be adopted depends upon the nature of the case. In the milder instances of allergy, the simple avoidance of contact with the protein or the altering of its character, as by heat, may be sufficient without any direct attempt at desensitization. If these methods are unsuccessful alimentary desensitization will probably be the most practical in allergy traced to foods.

REPORT OF CASES

Case 1. Referred by Dr. J. R. A. S. P., a girl, age 5 months. Child was breast fed one month and later tried on cow's milk dilution, evaporated milk, Mellin's food, and Dryco with poor results. She developed diarrhea and urticaria when any of these foods were pushed. She weighed 12 pounds when first seen and at that time had a rather severe fermentative diarrhea. Because of this condition protein milk was ordered. This resulted in vomiting, aggravation of the diarrhea, and urticaria. Skin tests revealed this baby to be sensitive to milk and, as "Sobee" was a milk-free preparation, she was placed on this. She did nicely, gaining about 2 pounds in the next several weeks but the same disturbances already noted returned. Skin tests were negative to carrots, peas, oats, rice, wheat, lamb and chicken. Accordingly, she was given this diet. In one month skimmed milk, which had been boiled one hour, and later whole milk were added. The baby progressed normally and three weeks after beginning treatment had gained three pounds. Occasionally she has digestive upsets accompanied by urticaria but these have always been traced to an indiscretion in the diet.

Case 2. Referred by Dr. J. L. T. J. M., a girl, age six months, was breast fed the first three days after birth, and then given lactic acid milk and dextri-maltose. This she vomited. When the mother returned from the hospital (10th day) the child was given Eagle Brand condensed milk for 2-3 weeks, which when pushed resulted in urticaria, vomiting, diarrhea, and high fever. Later, evaporated milk, protein milk, and several of the proprietary foods were given with the same results after a few days' use. Physical examination was negative except for urticaria, malnutrition, and allergic conjunctivitis. Because of the history of milk idiosyncrasy, "Sobee" was used. She remained on this five weeks with excellent results at first, but later the same symptoms returned. Skin tests were negative to apples, carrots, peas, potato, prunes, egg white, chicken and lamb. Accordingly she was given these articles of food. One

month later milk which had been boiled an hour was tolerated. This child is now 2½ years old and is healthy except for occasional attacks of eczema of the face, together with urticaria.

These two cases illustrate the use of "Sobee" in which sensitization developed in several weeks necessitating the removal of "Sobee" from the diet.

Case 3. Referred by Dr. A. M. C. L. S., a boy, age 5 months, was breast fed from birth and progressed normally until the mother added a small amount of cow's milk to the diet. This resulted in vomiting and diarrhea immediately after the milk was taken. Goat's milk gave the same results. Skin tests were negative to carrots, wheat, orange, tomatoes, prunes, egg white, lamb and "Sobee". These foods and breast milk constituted the diet for the first year. After that time boiled cow's milk was tolerated. The child has no more gastro-intestinal disturbances.

This case illustrated excellent results with the use of "Sobee".

Case 4. Referred by Dr. H. W. B. J. L., a girl, age 8 months, developed urticaria when Cream-of-Wheat was used in the diet. When Cerol was substituted, even though it is a wheat product, the skin condition immediately improved. The explanation here seems to be that Cerol is cooked somewhat longer than the other wheat products, and that heat has altered the product so that it can be assimilated without causing any allergic condition.

Case 5. N. L. B., a girl, age 5 years. This child comes from an allergic family. There are numerous cases of asthma, urticaria, and eczema among her relatives. For the past 3 years she has had frequent attacks of urticaria and abdominal pain following eating certain articles of food, notably eggs, beef, and tomatoes. No skin tests were done, the child being placed on an elimination diet consisting of rice, corn, oatmeal, milk, spinach, turnips, squash, carrots, lamb, chicken and bacon. She had remained symptom free for the past three months, and has gained nicely in weight.

Case 6. M. T., a girl, age three and one-half years. Was first fed on Eagle Brand condensed milk and later a cow's milk formula was used with good results. No previous illnesses up to 8 months before she was first seen, when she had measles followed by an attack of acute tonsillitis. Since that time she has had urticarial eruptions accompanied by considerable abdominal pain which occurred about thirty minutes after taking food. This pain was relieved by paregoric. Family history revealed no evidence of asthma, although an aunt and uncle of the child had eczema when they were babies. Physical examination showed malnutrition and infected tonsils together with several urticarial lesions over the chest and abdomen, also a papulo-pustular eruption on the feet and legs. A series of skin tests were done and she was placed on a diet avoiding those foods which reacted positively. When this was done, the eruption almost immediately disappeared. She had remained practically symptom free for over 18 months except for four separate attacks of abdomi-

nal pain and urticaria which were traced respectively to potatoes, oysters, pineapples and pecans. She is now able to take potatoes, bread, peas, and beef, foods which gave positive skin test 18 months ago, and caused symptoms when ingested.

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DISCUSSION

Dr. Marion Davidson (Birmingham): I just want to make a few remarks on Dr. Baumhauer's paper, which I enjoyed very much. I feel it is a very important subject and one of great interest to us.

In infants, the only allergic manifestations I have personally seen have been some cases of eczema and cases of asthma. As they grow older, of course, the other manifestations come into play.

I think a carefully taken history is of a great deal of value in helping us to determine what tests to make on these children. The younger the infant, the more apt the allergin is to be food, and I think Dr. Baumhauer was correct when he said that the more common foods are the common exciting causes. Milk, in my experience, is the most common cause. Next will probably come wheat and eggs because they are the three foods which are taken earliest in life.

Personally, I have had no cases of food sensitization in purely breast fed infants. My food sensitizations have all been in artificially fed infants, and in the artificially fed infant sensitive to cow's milk, the treatment of choice, of course, is a wet nurse, where one can be obtained. I have seen in the literature reports of sensitization to food where the contact was supposed to be through the mother's milk. I have had no personal experi-

ence with that but cannot say it is not possible, but in my experience it is improbable.

After the first few months, and even in the first few months of life, it is of great importance to realize, I think, that food does not play the whole role or is apt not to be the whole thing. It is of importance to realize that the feathers and the animal hairs and the other things with which the infant may come in contact are possibly, and in many cases, probably exciting causes, and if we limit our investigation to food tests we will fail to help some cases. Of course, in the small infant without any history of contact with animals, we could eliminate those tests until the child gets a little older. The various materials used in pillows and mattresses should be tested very early; also cotton seed, and in some cases flax seed should be tested very early.

The question of the tests comes next, and in the small infant we hesitate to do many intradermal tests and stick practically altogether to the scratch method.

There has been one advance in this line which I wish to mention and which offers a great deal of hope, although I must admit I have had no personal experience with it, and that is the method of testing by what is called passive transfer. About five cc. of the infant's blood is taken and the cells are separated from the serum under aseptic precaution. Then, an adult subject is taken with no allergic history,—that is important, and sites on the skin are injected with the infant's serum. A very small amount, about one tenth cc. of the serum is injected in about twelve to fifteen sites on the parent or other non-allergic relative, and in twelve to twenty-four hours these sites become passively sensitized and they can be used for making the tests on the adults and the positive reactions will indicate sensitization in the infant. It is important to get a non-allergic adult for the subject of the passive transfer as allergic subjects do not sensitize locally.

I enjoyed Dr. Baumhauer's paper, and I think it is a very important subject.

Dr. Baumhauer (closing): I want to thank Dr. Davidson for his very kind and considerate discussion.

By far the best treatment is the substitution of one milk product for another. For instance, if you have a child that has an idiosyncrasy to cow's milk or breast milk, goat's milk would probably be the best thing you could use.

In regard to the question whether or not evaporated milk is better from an allergic viewpoint than fresh cow's milk, I would say it is. We know the prolonged process, which has evaporated a little over half the water, has altered the protein so it can at times be assimilated without causing any allergic symptoms.

I agree that the history is by far the most important thing. Both the personal history of the child and the family history should be taken very carefully, because most of the time you will get a history of allergy among the relatives.

The important thing to remember when a baby is not thriving, is vomiting, has diarrhea, or has skin eruptions, there may be an allergic background.

THE JOURNAL
OF THE

Medical Association of the State of Alabama

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Office of Publication:

519 Dexter Avenue.....Montgomery, Ala

Subscription Price.....\$3.00 Per Year

November 1932

IMMUNITY TO MALARIA

Some of the most baffling problems in immunology are presented by the chronic infections. An acute self-limited disease, like typhoid fever or diphtheria, can readily be explained by our present knowledge; the infection occurs, the tissues of the host, stimulated by the bacterial invader, immediately react and the final outcome is soon determined. Either the parasite overwhelms the defenses of the host, with a resultant, rapidly fatal termination of the infection, or the cellular reactions of the infected tissues are successful in restraining the invader and the infection is ended in a comparatively brief space of time. The course of the infection is entirely different in such diseases as tuberculosis, syphilis and malaria. Instead of the sharp, brief struggle which quickly results in success for host or parasite, a condition comparable to trench warfare is established; neither side is able to conquer, transient advances being made by first one and then the other. There is no known explanation for the striking contrast in the clinical course of such infections as measles and syphilis.

Within the past decade, studies of protozoan infections have advanced our understanding of some of the basic cellular defenses against these chronic types. As Taliaferro¹ points out, some of the fundamental problems of immunology can be more easily studied in the blood protozoa than in the smaller bacterial invaders. "Trypanosomes and plasmodia, particu-

larly, because of their easily accessible location, their even distribution throughout the blood, and their large size, permit the direct correlation of the serologic and cellular reactions of the host with the course of primary infections and the acquisition of acquired immunity."²

A tremendous amount of study has been devoted to malaria, but experimental analysis of the disease has been limited, because of the unsuitability of man as an experimental animal. For this reason Taliaferro and his associates have used the avian organism, *P. cathemerium*, and more recently, a parasite of the monkey, *P. brasilianum*. The results of the observations made of these two species in two such different hosts have been so similar that it seems justifiable to translate this knowledge to an interpretation of the reactions of the human host to malaria infection.

Taliaferro and his associates have found, in both canaries and monkeys, that at the time of sporulation, there is an enormous increase in the death rate of the parasites. For example, in simian malaria, an average of nine merozoites are released from one schizont, not more than two of which survive to infect new cells. These figures were obtained from detailed counts of the parasites in blood smears taken at frequent intervals throughout the asexual cycle. The length of time for the completion of the cycle can also be shortened or lengthened by factors affecting the host. Thus, a reversal of night and day causes a change in the time of sporulation; chilling of the parasites increases the length of the cycle, so that, instead of all of the parasites maturing at approximately the same time, sporulation is spread over a whole day, or may occur in two or three broods, depending on the circumstances. In the latter event, a double or triple infection would be simulated.

After a large number of parasites has been introduced intravenously, the infection progresses rapidly for about twelve days, when a sharp crisis occurs; the parasites are scarce in the peripheral blood and latency develops, punctuated by occasional relapses at irregular intervals. If, during

(1) The Immunology of Parasitic Infections, N. Y. The Century Co., 1929.

(2) Taliaferro, W. H.: Experimental Studies of Malaria in Monkeys. Amer. J. Hyg. 16, 429, 1932.

this period of latency, reinfection is attempted, the injected parasites quickly disappear, in marked contrast to the rapid multiplication which occurs following the initial infection.

Studies by Taliaferro and Cannon³ indicate that the mechanism of resistance responsible for this prevention of superinfection is largely cellular. Furthermore, it is the macrophages of the liver and spleen which perform the chief functions in the phagocytosis and death of the parasites. If sections of the spleen and liver of canaries and monkeys are examined during the early period of the disease, when the parasites are multiplying in the circulating blood, the Kupffer cells are seen to be inactive and flattened, and the cells of the splenic pulp are normal in appearance. At about the time when the latent period begins, the cellular picture is entirely different. The macrophages of both liver and spleen are numerous, swollen and actively phagocytic. The lymphoid tissue of the spleen is hypertrophied and phagocytized pigment particles and parasites are seen in all the preparations. The entire infected red cell is ingested by the macrophage, and in all stages of the development of the plasmodium.

It appears, therefore, that this clear cut immunity which can be demonstrated following an initial attack of malaria is chiefly cellular, but Taliaferro believes that humoral antibodies may also perform a certain role. It is difficult to account for the increased concentration of the parasites in the phagocytic organs and the abnormal activity of the formerly dormant cells without predicated some sort of opsonizing property. The characteristic relapse, furthermore, is accompanied by a depressed phagocytic rate, sections prepared at such a time showing a lessened activity on the part of the macrophages. It seems likely that those phenomena which are known to bring on a relapse, such as change of climate, fatigue, etc., operate through their effect on the phagocytic activity of the macrophages, so that the few parasites which still remain, instead of being ingested as rapidly as they multiply, are permitted to increase and again invade the peripheral blood.

The immunity status in malaria, then, seems to be relative rather than absolute, as is the case in the acute infections. In the latter the parasite is entirely eradicated, while in the former complete extermination is more difficult. A delicate balance is established which may exist for a long time, with fluctuations resulting from external conditions which favor one side or the other. The cellular and humoral processes, instead of being permanently altered, so that immunity is lasting, are only transiently stimulated, so that reinfection after a brief time is again possible. L. C. H.

DRUGS FOR MALARIA

Quinine was employed therapeutically for malaria by Juan Lopez Corizores, corregidor of Loxa, about 1630.¹ Its use was popularized by the Countess of Chinchon, wife of J. F. deCabrera, Viceroy of Peru; J. de la Vega, a Spanish physician, who in 1640 taught his colleagues its therapeutic value; and Pedro Barba, a pharmacist, who was its champion against foreign ridicule in 1642.²

Quinine is practically one hundred per cent effective against malaria if given in adequate dosage for a sufficient length of time. The disadvantages are that some people have an idiosyncrasy; the therapeutic dosage may give rise to unpleasant discomforts; the period of administration is long; and there is no way to measure an adequate dosage. Many hundreds of substitutes have been suggested to overcome these disadvantages and fulfill the function of this redoubtable drug. Out of this group the arsenicals are the only ones that in any measure have withstood the test of time.³

In 1926 there was introduced a synthetic compound called plasmochin. This contains a quinoline ring, being n-diethylamino-isopentyl-8-amino-6-methoxyquinoline. At first the reports on this drug were enthusiastic. With greater experience, the addition of quinine synergistically was found to enhance its efficiency and to lower its toxicity. Plasmochin is found more effective in destroying the gametocytes,

1. Editorial: J. A. M. A. 18:1350 (1930).

2. Foreign News Letter: *Ibid*, 96:1639 (1931).

3. Bass, C. C.: *Ibid*, 95:988 (1930).

while quinine acts upon the asexual forms.⁴ Further experiments have shown that the dosage of plasmochin could be lowered to 1/12 grain and the quinine increased to 2½ grains. This composite is called chinoplasmin.

Atebrin (originally called erion) is a new synthetic compound based upon further research work with plasmochin. It has a heterocyclic group, being an amino-acridine derivative with alkyl groups. The powder is water soluble; is of an intensely yellow color and has a bitter taste.

Experimental work revealed no influence upon cardiac activity or the production of methemoglobinuria; and only with large doses was fatty degeneration of the liver and kidneys observed. In treatment, the drug exerted a destructive effect upon the schizonts of all forms of malaria, destroyed the gametes of tertian and quartan malaria, but did not affect those of the subter-

tian type. Plasmochin in combination with atebrin is recommended for these cases.

Following these investigations the drug was tried in the hospitals of the United Fruit Company⁵ in Cuba, Columbia and the Honduras. Three hundred cases received treatment. The results were uniformly gratifying. There were few relapses, and no hemoglobinuric fever was induced. The only untoward symptom observed was a yellow discoloration of the skin. This was more apt to appear if the treatment was maintained over a period of six days, but cleared up in a few weeks.

Whether this new compound will displace quinine is a matter of conjecture. At present the results are encouraging; but the experimental stage has not been passed. Hence judgment must be reserved. Quinine is still supreme though at times an adjuvant becomes desirable. M. E. S.

4. Whitmore, E. R.: South. M. J. 5:415 (1931).

5. Conner, R. C.: 20th Annual Report, United Fruit Co., 1931.

THE ASSOCIATION FORUM

(Under this heading will appear, from time to time, as occasion may arise, contributions having a direct bearing on the general policies, functions and interests of the Association. Articles submitted should be of an impersonal nature.)

ALABAMA'S HEALTH DEPARTMENT AND THE FINANCIAL CRISIS

J. N. Baker, M. D., State Health Officer

It may be stated at the outset that the liberality and appreciation shown by the succeeding legislatures of Alabama in making available gradually increasing sums for health work can be directly attributed to the vision, the leadership and the unselfish devotion of organized medicine in the field of public health. No other State has ever had, nor is likely to have, an united profession sponsoring and promoting its health program to the extent which Alabama has had. Add to these the unfailing support, both financial and otherwise, given our efforts by the United States Public Health Service and the Rockefeller Foundation and one has the tripod upon which Alabama's greatness in public health has been built. The two financial legs of this tripod, formerly braced through outside aid, had been, up to now, satisfactorily cared for through legislative appropriations. Because of the dire straits in which the State now finds itself, these props, of necessity, have been weakened, but not broken. The

third leg—the leadership and devotion of the medical profession—still stands and now needs to be bolstered and strengthened more than ever before. To this bolstering process every doctor in the State can and should give his support. This trust, consigned to us more than a half century ago by the people, must continue to be discharged in the same fine and unselfish spirit which characterized the preceding generation of physicians in this State, or else it should be given back to the people. If the future may be gauged by the past, this, the most powerful leg of the tripod, will stand deep-rooted in the traditions of Alabama medicine.

The necessity for adjusting a \$686,000.00 annual service outlay to a \$400,000.00 budgetary allotment constitutes the problem immediately facing the Health Department. The moneys available for health service during the present fiscal year may be even less than the above figure. That is to say, the public health dollar, formerly having a value of one hundred cents, has now shrunk to a value of fifty-eight cents. Unfortunately, health workers have no magic wand, the wielding of which can cause the health

dollar to expand to twice its former value. One should not have to reach the octogenarian's milestone in this life before realizing that one gets what one pays for. The former appropriation which sounds munificent in these arid times was enjoyed for only a part of one quadrennium as a result of thirteen years' steady rise in the public appreciation and demand for modern, scientific health service. This amount of \$686,000 represented a per capita expenditure for health of about twenty-five cents and but one and one-half per cent of the State's total expenditure for all purposes. The present allotment of \$400,000 means that the State will now expend less than fifteen cents on a capitation basis for public health. The position of organized medicine as the sponsor and legal health authority of the State has made possible during the past fifteen years an untrammelled progress in health administration along advanced and sound scientific lines. The growth has been wholesome, steady and gradual. Every new service has been established upon carefully prepared ground in answer to a demonstrated and acknowledged need and the machinery for operation studiously thought out. For each new service evolved adequately trained personnel has been provided to insure sane progress along sound lines. Thus, has come into being a milk sanitation program which has served as a model for the United States; a State-wide laboratory system which has not its peer in the South and which makes expert service available to every section within a few hours; a State-wide engineering service safeguarding water supplies and preventing malaria and hookworm infestation.

In addition to these special services, general county health services have been established in fifty-four of the sixty-seven counties and these have been officered by medical men acceptable to the county medical societies. The county health unit service includes health nurses who likewise must be acceptable to the medical societies and the public in addition to being acceptable to the health officer. All of these various activities are supported in whole or in part by the funds appropriated by the State for health service. County health units alone drew last year \$275,000.00 of this appropriation, or approximately 39%.

Where should retrenchment begin? Ob-

viously, the problem should be met with the least possible sacrifice of fundamental health protective services. There should be the least possible sacrifice of efficiency and of sound scientific standards of procedure. It is easy in a crisis to permit the lowering of standards and to let safe moorings go by the board; but it is relatively difficult to regain lost ground.

It goes without saying that the problem must be met without sacrificing in any degree the integrity of the public trust which for the past fifty-seven years the State of Alabama has reposed in organized medicine. Yet it is not an easy task for members of the State Board of Health to acquaint themselves adequately with the details of so intricate a problem; while for the full membership of the State Medical Association it is quite impossible to have a practical working knowledge of even a few phases of the activities of the State Health Department.

The first approach must be in the reduction of salaries and the diminution of personnel throughout the entire organization, including the central office and field forces, the branch laboratories and the cooperative clinic service. All of these means had been employed before the end of October, 1932. The scale of salary reductions passed by the Legislature has been put into effect and the services of some fifty-five employees discontinued as of November 1st.

The next step is a careful selection of the absolutely essential measures of health protection and the elimination of all non-essentials. The Board has seen fit to limit the service of the central and branch laboratories to work of a strictly public health nature. The examination of all specimens for clinical tests will be discontinued. The collection of specimens by the laboratories will likewise be discontinued.

However valuable promotional activities may seem, it will be necessary to hold in temporary abeyance certain constructive educational projects upon which the future success of Alabama's health program must rest. Effort will be made to substitute in some measure the health education programs of voluntary, civic, social, and news agencies.

If the critical problems which the Health Department is now facing can be met successfully it will mean the highest possible

measure of security in health for the people of Alabama; whereas, a failure to measure up to the demands of the present situation means disaster to the people of the State and everlasting dishonor to organized medicine in Alabama which for fifty-seven years has borne the legal responsibility for carrying on a governmental health service.

It is true that in spite of present conditions the general and special death rates are lower than they have been in a number of years. This general trend in recorded death rates is manifested throughout the United States. It is not so clear that there is less sickness, as an increasing number of the sick poor are now deprived of medical attendance and the records of an increasing number of deaths lack authentic medical statements of cause of death. Would not reasonable foresight justify the assumption that the next five years will witness a slow and disheartening struggle up from economic depression, the rise being hampered and retarded on every social level by a lowered physical vitality and a battered and depleted central nervous force which will render our people an easy prey to preventable sickness and death?

The membership of the entire State Medical Association can help by thinking in terms of the responsibility of organized medicine in Alabama for an understanding and sympathetic administration of the

health affairs of the State. This means the expenditure of sufficient time and thought upon these problems and especially upon the cost of adequate health protection to enable them to avoid the errors of judgment that are sure to come from a superficial examination and comparison of poorly digested information.

The employed workers can help by maintaining at all times a high standard of work. It is human and natural in a crisis, when more is expected of the worker at a lower return both in money and appreciation of effort, that the technical as well as the clerical worker should lose heart and lower standards of performance. Every safeguard against this calamity must be thrown around Alabama's health service.

The central office activities must still function as the vital center of the health system, furnishing the motive power, establishing standards of performance, enunciating the high objectives and deciding where the dividing line may be safely drawn between an essential outlay for the integrity of the governmental health services and a desirable but not feasible undertaking of a public health nature. Striking a balance in the central office and field efforts toward health protection and security for Alabama citizens will spell the difference between a sick and sorely harassed State and a commonwealth ruled by a sane outlook and a courageous spirit.

DEPARTMENT OF PUBLIC HEALTH

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

PLASMOCHIN EXPERIMENTS

During the seasons of 1930 and 1931 experiments were carried out to determine, if possible, the value of plasmochin in the prevention of malaria. The general plan of the experiments was to administer plasmochin at regular intervals to all the people living in a certain area and to observe the effect on the incidence of malaria during the season; a similar area was used for control.

The first year, 1930, such an experiment was carried out in two counties in the State, each area embracing approximately five

hundred people. The plan of operation included an original blood survey, together with the history of previous malaria. This was followed by the administration of plasmochin compound tablets (each containing 0.01 gms. plasmochin and 0.125 gms. quinine sulphate) at weekly intervals to the demonstration groups. The clinical cases of malaria occurring in both demonstration and control groups were carefully recorded and a second blood survey was made at the end of the work.

The plan followed the second year, 1931, was similar to the preceding year with certain changes being made:

1. One large area of approximately 31 square miles and containing a population of about 1,100 was used for the demonstra-

tion. A similar area near by was used for control.

2. The dosage of plasmochin was increased to one tablet twice a week.

3. Mosquito catching stations were set up in each area to prove the presence of *Anopheles quadrimaculatus*.

There was a marked reduction in malaria in all areas in both these years, but the reduction was much more marked amongst those receiving plasmochin. Mosquito catches showed more *Anopheles quadrimaculatus* in the demonstration area, so this increased reduction was not due to a greater lack of vectors. The blood surveys did not record any particular difference in the two areas either year.

From this it would appear that plasmochin compound in dosage of 1-2 tablets per week (each tablet containing 0.01 gms. plasmochin and 0.125 gms. quinine sulphate) when administered to all the inhabitants of a district will materially lessen the incidence of malaria.

BUREAU OF VITAL STATISTICS

W. T. Fales, Director

RESIDENT DEATH RATES FROM TYPHOID FEVER, DIPHTHERIA AND MALARIA ALABAMA 1931

In the accompanying table there are presented the death rates from typhoid fever, diphtheria, and malaria for counties and large cities, after the deaths have been redistributed according to "residence". While in most instances the actual residence of the deceased is meant, our procedure has been such that in case the residence at time of infection is known that fact has been taken into consideration in allocating the death. Such corrections give us a more accurate picture of the distribution of the death rate from these causes than tables showing the recorded death rates only.

In the summary at the top of the table there are presented the death rates from these causes for the counties with health units, exclusive of large cities; the counties without health units, and the large cities with more than 10,000 population.

Evidence that counties with health units have a better health record is shown by the fact that only 46 per cent of the unorgan-

ized counties had typhoid death rates of less than 10 per 100,000 population, where 74 per cent of the counties with health units had such low rates.

In the case of diphtheria, 46 per cent of the unorganized counties had a diphtheria death rate of less than 10 per 100,000, against 67 per cent in the organized counties. Perhaps no figures show more strikingly the benefits of organized control of these epidemic diseases than the above.

In the case of malaria, the same favorable picture is not presented. It so happens that the thirteen counties that do not yet have health units are located in non-malarious areas. As a result, the death rate from malaria in the unorganized counties is only 8.2, compared with 8.8 per 100,000 population in the counties with health units. It is probable that the true malaria incidence in the unorganized counties is even less than would be indicated by the difference between the death rates in the two groups. This statement is made because certification of deaths as due to malaria is often erroneous, and it is a well known fact that deaths in general are certified to with greater accuracy in the counties in which we have organized health departments than in other counties. The highest death rates from malaria in 1931 were in Geneva, Houston, and Clarke Counties. These three counties, together with Washington and Wilcox, represent the counties with the largest malaria problem.

In these times of financial stress it is believed that the better record for typhoid fever and diphtheria, as is shown in this table, should receive more emphasis. For example, if the organized counties had had as high a death rate from typhoid fever as the counties without health units, there would have been 116 more deaths and over one thousand more cases of typhoid last year. A conservative estimate of the economic saving represented by the fact that only 154 deaths occurred in these counties and the large cities is \$350,000.00. This figure does not include the savings in doctors' and nurses' bills. These facts show clearly that the control of typhoid fever alone can be said to have saved the citizens of Alabama an amount more than equal to one-half of the annual appropriation of the State Board of Health.

RESIDENT DEATHS* AND DEATH RATES FROM TYPHOID FEVER, DIPHTHERIA AND MALARIA BY COUNTIES
AND LARGE CITIES, ALABAMA, 1931

	Typhoid Fever				Diphtheria				Malaria			
	White	Colored	Total		White	Colored	Total		White	Colored	Total	
			No.	Rate			No.	Rate			No.	Rate
Entire State	193	84	187	7.0	155	50	205	7.6	96	119	215	8.0
Organized Counties	80	53	133	7.3	129	27	146	8.0	78	81	159	8.8
Unorganized Counties	13	20	33	11.3	18	16	34	11.6	12	12	24	8.2
Cities over 10,000 population	10	11	21	3.6	18	7	27	4.3	6	26	32	5.5
Cities over 10,000 population												
Anniston					1	1	2	8.7	1	4	5	21.8
Selma	2	1	3	16.4	1		1	5.5				
Gadsden	3		3	11.9	3		3	11.9				
Dothan												
Birmingham		4	4	1.5	6	1	7	2.6	2	8	10	11.9
Bessemer					3	1	4	19.1	1	2	3	14.3
Fairfield		1	1	8.5		1	1	8.5				
Florence	1	2	3	25.2								
Huntsville		1	1	8.3	1		1	8.3	1	1	2	16.7
Mobile	2	1	3	4.3	1	2	3	4.3	1	1	2	2.9
Montgomery	1	1	2	2.9	1		1	1.5		4	4	5.9
Decatur											1	6.3
Tuscaloosa	1		1	4.6	1	1	2	9.2		3	3	13.8
Counties exclusive of cities over 10,000 population												
Autauga**		3	3	15.2		1	1	5.0		2	2	10.1
Baldwin					1		1	3.4	2		2	6.8
Barbour		3	3	9.2	1		1	3.1	2	4	6	18.5
Bibb**		1	1	4.8					2	1	3	14.4
Blount	7		7	24.7	6		6	21.2				
Bullock						1	1	5.0	1	1	2	10.0
Butler**		3	3	9.9	1		1	3.3	2	1	3	9.9
Calhoun	2		2	5.9	3		3	8.9				
Chambers		4	4	10.2	4		4	10.2	1		1	2.5
Cherokee		1	1	4.9	5		5	24.7				
Chilton**					4		4	16.1	1	2	3	12.1
Choctaw	1		1	4.9		1	1	4.9	1	2	3	14.6
Clarke	1	1	2	7.7	1		1	3.8	2	7	9	34.6
Clay**		3	3	16.9	3		3	16.9				
Cleburne					1		1	7.8	1		1	7.8
Coffee	1	1	2	6.1					5		5	15.2
Colbert		2	2	6.7	1	1	2	6.7		2	2	6.7
Conecuh	1		1	3.9		1	1	3.9	1	3	4	15.7
Coosa**					1	1	2	16.0				
Covington	2	3	5	12.0					1	1	2	4.8
Crenshaw	3	1	4	16.9	1		1	4.2	3		3	12.6
Cullman	11		11	26.2	6		6	14.3				
Dale					1		1	4.3	5	2	7	30.1
Dallas					1	4	5	13.6	2	7	9	24.4
DeKalb	7		7	17.2	8		8	19.6				
Elmore	1	2	3	8.6	3	1	4	11.4	1	2	3	8.6
Escambia					1	1	2	7.0	2		2	7.0
Etowah		1	1	2.5	1		1	2.5	1	1	2	5.0
Fayette**	3	1	4	21.7	3		3	16.3	2		2	10.8
Franklin	1		1	7.2	2		2	7.8				
Geneva	3		3	9.9	3		3	9.9	9	4	13	43.0
Greene**						9	9	45.1		4	4	20.1
Hale**	1	3	4	15.1		2	2	7.5				
Henry**					1		1	4.3		2	2	8.7
Houston	3		3	9.9	4		4	13.2	9	7	16	53.0
Jackson	2		2	5.4	2		2	5.4		1	1	2.7
Jackson	4	2	6	4.2	5	1	6	4.2	5	1	6	4.2
Jefferson		2	2	11.1	1		1	5.6	2		2	11.1
Lamar	4	1	5	17.0	1		1	3.4	1		1	3.4
Lauderdale	1	2	3	11.0	2	1	3	11.0				
Lawrence	1	3	4	11.0	1	4	5	13.7				
Lee	2		2	11.1	4		4	10.8	1	1	2	5.4
Limestone	1		1	4.4						1	1	4.4
Lowndes		2	2	7.3		1	1	3.6		3	3	10.9
Macon	2	3	5	9.2	7		7	12.9	6	1	7	12.9
Madison	1	1	2	5.5		1	1	2.7	1	3	4	11.0
Marengo	2	1	3	11.3	2		2	7.6				
Marion	2		2	4.9	7		7	17.2				
Marshall		1	1	1.9	4	2	6	11.6		3	2	5.9
Mobile		3	3	9.9	1	1	2	6.6	1		1	3.3
Monroe		2	2	6.1		1	1	3.0	1	5	6	18.3
Montgomery												
Morgan	6		6	19.1	5		5	15.9				
Perry		2	2	7.5						1	1	3.8
Pickens					1		1	4.0		3	3	12.0
Pike	2		2	6.2	1		1	3.1				
Randolph**	5	3	8	29.3	2		2	7.4	3		3	11.2
Russell**	3	1	4	14.6		3	3	11.0	2		2	7.3
Shelby		1	1	3.6	5		5	18.1		2	2	7.2
St. Clair**	1	2	3	12.2	3		3	12.2				
Sumter		1	1	3.7		1	1	3.7		4	4	14.8
Talladega	1	2	3	6.6	4	3	7	15.3	1	1	2	4.4
Tallapoosa												
Tuscaloosa		2	2	4.6	3		3	6.9	1	2	3	6.9
Walker	3		3	5.0	8		8	13.4	4		4	6.7
Washington					1		1	6.0	3	1	4	24.1
Wilcox	1	3	4	16.1						6	6	24.1
Winston	1		1	6.3	1		1	6.3				

*Deaths redistributed according to usual place of residence unless place of infection is known and includes deaths of Alabama residents dying in other states and excludes residence of other states dying in Alabama unless residence was of such duration to account for infection.

**Counties without health units.

BUREAU OF CHILD HYGIENE AND PUBLIC HEALTH NURSING

Jessie L. Marriner, Director

REMEMBERING WHEN*

*"Most of us, straddling more than one epoch,
delight in remembering when."*

A May Day picnic in Etowah county brought "cattle dipping" under suspicion as a cause of child deaths.

On the 18th of May, 1919, there was a May Day celebration in Aurora; every family within a radius of three miles of the village gathered at the cemetery to decorate the graves and have a picnic dinner spread on the green turf of the churchyard. Two of the families present had just been ill with flux; one or two of these convalescents were barely "out of bed" but they couldn't be left at home alone, so they "braced up, and went along." There were two old open-back toilets within a few rods of the cemetery and numerous bits of shrubbery even nearer. Flies were plentiful and they seemed to like the tempting viands spread on the ground. "A good time was had by all."

Three children who lived near the cemetery did not attend the picnic, were in fact out of town on that day, but fourteen days later these little ones became violently ill; the flies swarming over their ill smelling, poverty-stricken home had attended the picnic; in three or four days these children were dead. Their parents were "sorry" white folk and they lived very poorly. The doctor found unwashed diapers thrown carelessly on the fence to dry. Two children in another family were taken ill about the same time; they had attended the picnic; this family was living in a new house which had not been provided with a toilet of any kind. Within the week these children died and a third was taken ill.

In another family were two children of a widowed mother who did not attend the picnic but who owned one of the insanitary toilets referred to above. This home was clean and showed many evidences of intelligent care, but there were no screens and flies were numerous. Both children died

after a few days' illness and other members of the family became ill.

The Director of the Bureau of Child Hygiene and Public Health Nursing was in this county engaged in organization work when she received instructions from headquarters to proceed to Aurora and investigate the epidemic which had been reported to the State Board of Health. A letter to the State Health Officer stated that there had been nine deaths in one week, all within a radius of one mile from the village.

An early morning train took the nurse on the first leg of her journey, a distance of twenty-five miles; then a small town taxi was pressed into service for the remaining fifteen miles. As she approached the vicinity where the deaths had occurred inquiries were begun; the doctor who had attended most of the cases was found and interviewed; he thought it was an unusually severe form of bacillary dysentery, but the country people thought it might have been caused by the dipping of cattle for the eradication of ticks.

Visits were made to all of the homes where deaths had occurred and to several where children and adults were seriously ill with the disease. It is believed that this one day's teaching exonerated the dipping vat, but it is too much to hope that people who have long been accustomed to violating the sanitary law of Moses may be easily and quickly won to its observance.

To make a brief, sad story less harrowing, improper disposal of excreta caused the spread of this serious type of dysentery to practically 80 per cent of the citizens within a three-mile radius; in one home ten people were ill at the same time but all recovered.

The visit of the nurse was followed up by the sanitary inspector from the newly organized Etowah County Health Unit.

NEXT MEETING OF THE ASSOCIATION

MONTGOMERY

APRIL 18-21, 1933

*Third in a series under this title. The first appeared in the September number.

BUREAU OF ENGINEERING

G. H. Hazlehurst, Director

MOTION PICTURES IN PUBLIC HEALTH EDUCATION

Contributed by

F. B. Wood

Assistant Sanitary Engineer

A previous article* dealt with the progress made in public health education with special reference to the motion picture show. Reference was made to the timely change from 35 mm. to 16 mm. films and equipment, thus broadening the scope of the work.

In the past two years material improvements have been made by the manufacturers in 16 mm. projection equipment and methods of producing films. A corresponding decrease in costs has resulted. A good 16 mm. projector may now be purchased for about \$50.00, instead of \$250.00 for the 35 mm. size. It will operate on either 110 or 6-volt current. Hand cranking when using 6-volt current has been eliminated. Reprints of all local films can be secured for about \$10.00 each. The others may be obtained through benevolent organizations for the cost of printing, which ranges from \$10.00 to \$20.00 per reel. These films in the 35 mm. size would cost from \$50.00 to \$100.00 each.

The ultimate aim is for each county health department to own a 16 mm. projector and set of films. Shows can then be scheduled and given when and where thought most profitable without dependence on any outside agencies. To date seven counties have acquired films and equipment.

When work was begun in December 1930, looking to an increase in public health education through visual means, it was realized that many counties would not be able to acquire the equipment though costs had been greatly reduced. Therefore, a number of projectors were purchased by the State Department of Public Health. These were placed in service in the several counties where special personnel was provided. As occasion arose, transfers were made from one county to another until now, in all, educational programs have been conducted in some thirty counties.

While many shows have been given to small groups as civic organizations, clubs, governing bodies, individuals and the like, by far the greatest number of people have been reached through schools and community gathering places in the rural sections. Incidentally, it is here that the need for health education is greatest, and the type of equipment employed is best suited.

In arranging the program at the schools, a conference is held between the county superintendent of education and the health officer. A letter is then directed to each principal, setting a date for the show at that school. A full day is taken at each school with parents being invited to attend. Short lectures are given between reels. Shows at community gathering places are presented in the early evening. The people are given two or three days advance notice by letter, poster or personal contact. In one county the average attendance ran well over 200 people and over a period of thirty days, approximately 30 per cent of the population was reached.

The present films treat with diphtheria, malaria, sanitation, hookworm disease and the general activities of a typical county health department. The films of greatest interest to the audiences are the ones which convey the health lessons in story form through a portrayal of every day life. The first local film of this type is now being produced. It deals with dental hygiene and is a story woven around the children in an average family.

The result of the work is difficult to appraise at this time. However, health officers and field workers report a very definite increased interest in health work resulting therefrom.

BUREAU OF INSPECTION

C. A. Abele, Director

RESULTS OF A RECENT SURVEY OF MILK PRODUCTION CONDITIONS IN ALABAMA

A survey of sanitary conditions at the 475 dairies and 23 milk-plants in 48 communities in this State which are subject to the U. S. P. H. S. Milk Ordinance or the State Board of Health Milk Regulations has just been completed. The data cover-

*September number of this Journal.

ing the sanitary conditions have been forwarded to Washington so that sanitation ratings of all municipal milk supplies can be computed, and compared with those of other cities.

In the data submitted were included the average bacteria count and the average sample temperature reading of every milk supply for the six-months period preceding the survey. It will be of interest to the patrons of dairymen and milk-plants in every city in which the Milk Ordinance is being enforced that the average bacteria counts of 46% of the retail raw milk supplies were under 10,000 per cc.; that the average counts of 94% of these supplies, over the six-months period (which in most cases included summer months), were under 50,000 per cc., the legal limit for Grade A Raw Milk; and that 87.6% of the average sample temperatures were 50° or less; and that the average bacteria counts and average temperature of 96% of the pasteurized supplies were under 50,000 per cc., and 50° or less, respectively.

Students of market milk quality throughout this country have frequently referred to the absence of effective milk control in towns of less than 10,000 population, and offer the more frequent occurrences of outbreaks of milk-borne disease in communities in this population range as evidence of this general condition. Thirty-six of the forty-eight towns in which the State Health Department is aiding in milk control activities are in the "less than 10,000 population" class. These communities are supplied with retail raw milk from 129 commercial dairies, and in five of them pasteurized milk is sold by six plants.

During the six-months period prior to the surveys 1,383 bacteria counts and 1,322 temperature readings of these 129 retail raw milk supplies were made. (This is an average of 21 samples per supply per year—a sample every 17 days.) The average bacteria counts of 72 (55.8%) of these retail raw milk supplies were under 10,000 per cc. The average counts of 119 (92.3%) were under 50,000 per cc., the legal limit for Grade A Raw Milk. In two communities in the "less than 1,000 population" class (one dairy in each), in three towns in the "1001 to 2500" class, in three towns in the "2501 to 5000" class, and in one town in

the "5001 to 10,000" class the average bacteria counts of all the retail raw milk supplies (numbering from 1 to 5) were under 10,000 per cc.

The six pasteurized milk supplies were sampled at the rate of 24 samples per supply per year—a sample every 15 days. The average bacteria counts of three of the supplies for the preceding six-months period were under 10,000 per cc., and the average counts of all the supplies were under 30,000 per cc.

It is true that too much emphasis is often placed upon bacteria counts in judging the safety of a milk supply. Nevertheless, in view of our knowledge of dairy conditions, we feel safe in pointing to these low average counts as evidence of the maintenance of high standards of sanitation at the dairy farms of this State, especially in those communities of less than 10,000 population. It appears that in this respect the system of milk-quality control in this State has effected the solution of a problem which is still troubling health authorities in other states.

CURRENT STATISTICS

State Department of Health

*PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA

	1932 September	1932 August	Total Cases to Date	
			This Year	Last Year
Typhoid	95	134	637	703
Typhus	51	26	158	41
Malaria	445	355	1615	1724
Smallpox	2	0	455	232
Measles	3	1	260	9173
Scarlet fever	191	71	797	1055
Whooping cough	36	74	1300	634
Diphtheria	285	109	986	981
Influenza	19	24	2629	5782
Mumps	27	40	846	1054
Poliomyelitis	7	4	25	41
Encephalitis	2	4	16	34
Chickenpox	8	4	887	1499
Tetanus	5	7	51	36
Tuberculosis	355	398	3534	4028
Pellagra	31	79	691	1010
Meningitis	5	4	52	202
Pneumonia	52	54	1966	2889
Syphilis (private cases)	183	161	1633	1181
Chancroid (private cases)	1	3	33	51
Gonorrhea (private cases)	106	113	1032	1235
Ophthalmia neonatorum	2	0	16	11
Trachoma	0	1	2	2
Tularemia	0	1	28	5
Undulant fever	2	4	16	12
Dengue	0	1	3	2
Rabies	0	0	0	2

*As reported by physicians and including deaths not reported as cases.

PROVISIONAL MORTALITY STATISTICS
Alabama, August 1932

	Number of Deaths Registered August 1932			Annual Rate per 100,000 Population		
	White	Black	Total	August 1932	August 1931	August 1930
ALL CAUSES	1133	1002	2135	929.5	942.1	1018.1
Typhoid fever	8	5	13	5.7	14.9	16.4
Smallpox						
Measles					1.7	1.3
Scarlet fever	1		1	0.4	0.4	
Whooping cough	15	5	20	8.7	3.9	8.0
Diphtheria	16		16	7.0	3.9	2.2
Influenza	8	13	21	9.1	4.8	4.4
Pneumonia, all forms	38	36	74	32.2	31.1	38.5
Poliomyelitis						0.9
Tetanus	3	3	6	2.6	2.6	2.2
Tuberculosis, all forms	63	100	163	71.0	85.4	78.8
Tuberculosis, pulmonary	60	92	152	66.2	76.2	72.6
Malaria	12	12	24	10.4	11.8	15.0
Cancer, all forms	88	33	121	52.7	50.3	50.9
Diabetes mellitus	14	6	20	8.7	9.6	5.3
Pellagra	19	15	34	14.8	19.7	24.3
Cerebral hemorrhage, apoplexy	71	44	115	50.1	54.7	54.4
Diseases of heart	128	132	260	113.2	102.4	122.6
Diarrhea and enteritis						
Under 2 years	39	15	54	23.5	38.1	34.5
2 years and over	22	7	29	12.6	7.4	13.3
Nephritis	99	86	185	80.5	76.6	96.5
Puerperal state, total	20	21	41	17.8	13.6	16.4
Puerperal septicemia	6	7	13	5.7	3.9	6.2
Congenital malformations	9	4	13	5.7	7.9	8.0
Congenital debility and other diseases of early infancy	77	55	132	57.5	52.1	59.8
Senility	15	20	35	15.2	12.7	15.0
Suicides	13	1	14	6.1	6.6	6.2
Homicides	17	28	45	19.6	18.4	25.2
Accidental burns	5		5	2.2	3.1	2.2
Accidental drownings	11	7	18	7.8	4.8	10.2
Accidental traumatism by firearms	6	2	8	3.5	1.7	3.5
Mine accidents					0.4	1.9
Railroad accidents	6	6	12	5.2	2.6	5.7
Automobile accidents	28	12	40	17.4	23.5	23.5
Other external causes	41	12	53	23.1	27.1	24.3
Other specified causes	177	180	357	155.4	144.0	153.6
Ill-defined and unknown causes	64	142	206	89.7	103.7	89.1

Miscellany

SOCIAL INSURANCE

*Abstract of articles on the subject by
Dr. Edward H. Ochsner*

Foreword: At the last meeting of the Association held in Mobile, this body approved a recommendation submitted by the State Board of Censors that an abstract of articles, prepared by Dr. Edward H. Ochsner of Chicago on Social Insurance and appearing in some of the State Medical Journals, appear in this Journal. In compliance with this action an abstract of five articles, which have already been published, is given below.

Dr. Ochsner writes on Social Insurance Undermines National Character:

The proponents of Compulsory Health Insurance or National Insurance, as it is called in England, reiterate again and again that these and the dole are totally different. In name and administration, yes; in effect, no. They both encourage people to want something for nothing or

much for little which in effect makes parasites out of them.

The whole social insurance scheme is based on the ethically indefensible theory that individuals are entitled to things that they have not earned and on the politically unsound doctrine that society owes every citizen a comfortable living whether or not he repays society by doing his fair share of the world's work. Under Compulsory Health Insurance the individual who works only half-time is entitled to just as much free medical service and is likely to get much more in sickness benefits than he who works full time.

It is a well-known fact that alcoholics and those suffering from venereal diseases are much more liable to loss of time from sickness than are those not so affected. What right has any just government to take of the earnings of the third group without their consent and give them to the first two groups? A just and humane government protects the weak from oppression and exploitation by the strong and unscrupulous; but a just and wise government does not penalize the strong, industrious, clean-living and thrifty and favor the weak, lazy, shiftless and immoral. Giving the weak, lazy, and shiftless undue advantage over the strong, industrious and thrifty actually penalizes and handicaps the latter, interferes with the law "of the survival of the fittest", and must eventually lead to race degeneracy. If the white race persists in this course long enough, the "yellow peril", so often glibly and jokingly mentioned, may become a real menace to western civilization.

All independent writers on the subject state, and even the proponents of Compulsory Health Insurance have to admit that it has tremendously increased occupational neuroses, and that is just what was to be expected and was expected by those who know human nature and can see just a little further than the ends of their noses.

One of the worst features of Compulsory Health Insurance is that if continued long enough it will crush out of character the three capital I's—Independence, Industry, and Integrity. The ideal society would be one in which every individual can and does secure a decent living for himself and those dependent upon him by the "sweat of his

brow", or by mental exertion, or, what would be better still, by the application of both brain and brawn.

The proponents of Compulsory Health Insurance will undoubtedly say that it was with the view of saving men and women from the stigma of being paupers and the evil effects of pauperism that this and other phases of social insurance were brought forward. Exactly, but what has actually happened they did not foresee. As is so generally the consequence when a law is enacted on an emotional basis instead of on sound reasoning and adequate experience, an element was introduced even worse than pauperism; besides, pauperism was not relieved nor even mitigated.

There are two distinct types of paupers. The mentally and morally subnormal who are not in any way injured by the stigma of pauperism and who still remain paupers because no Compulsory Health Insurance law so far devised includes or can include them. They are the "unemployables" whom industry cannot use. The second class are old people who in their youth have been lazy or extravagant, or who have lost their savings through poor investments.

QUALITY OF MEDICAL SERVICES DETERIORATE UNDER COMPULSORY HEALTH INSURANCE

The chief danger to medical progress and efficient medical service to the American public comes from that small group who wish to establish lay bureaucratic control over the private practitioners of medicine and dentistry.

The State exercises a legitimate and proper function in public hygiene and sanitation, the teaching of personal hygiene in schools and colleges, in the medical care of paupers, criminals, and the indigent in general, but whenever and wherever it has entered into the private practice of medicine it has always resulted in inefficiency. Even in institutional work, with the possible exception of University Clinics, the medical service rendered by the government is rarely excellent or even good, nearly always mediocre and oftentimes even worse. Any change in the practice of medicine and dentistry which will in any way hinder these professions from giving their best services will eventually react unfavorably upon the whole nation. That State Medicine and Compulsory Health Insurance actually will and do lower the general quality of medical

and dental services is supported by reason and experience. While it may level up a little from the bottom it unquestionably levels down from the top and it is this leveling down that will surely stop medical progress.

Medical progress depends not so much upon the rank and file of the profession as upon occasional great men with vision. If we unduly hamper these great medical minds, medical progress must cease. The quality of medical services received by the people in general depends in large measure upon the quality of teaching which the rank and file of the profession receive and upon the enthusiasm and the ideals which are instilled into them by their teachers. Men of great ability can do their best work only if absolutely free, and a physician under lay bureaucratic control never is entirely free. Andrew Carnegie, one of the most successful men of modern times in the best sense of that word, makes the following statement in his autobiography: "Thereafter I never worked for a salary. A man must necessarily occupy a narrow field who is at the beck and call of others."

That Compulsory Health Insurance does not in fact prevent sickness nor reduce economic loss as the result of sickness is proven by the following facts. Before the World War the average loss of time for sickness of the American laboring man was six and two-tenths (6.2) days per year; the German's, nine and two-tenths (9.2) days; the Austrian's, nine and five-tenths (9.5). We are credibly informed that since 1923 the loss of time in Germany has increased another eighty per cent above the nine and two-tenths (9.2) so that it now stands at approximately sixteen and five-tenths (16.5) as against six and two-tenths (6.2) in America. A fine showing for Compulsory Health Insurance after forty-eight years of operation!

I maintain that the poorer classes of patients get better services in this country than they do in those countries of the world that have Compulsory Health Insurance and that their medical requirements are at least as efficiently met as are their food, clothing and particularly housing, requirements. This phase of the problem is an economic one and can not be solved by a palliative such as Social Insurance is.

Book Abstracts and Reviews

Physical Therapeutic Technic: By Frank Butler Granger, A. B., M. D., Late Physician-in-Chief, Department of Physical Therapy, Boston City Hospital; Director of Physical Therapy, United States Army; Medical Counselor, United States Veterans' Bureau. Revised by William D. McFee, M. D., Visiting Physician, Department of Physical Therapy, Boston City Hospital; Attending Specialist in Physical Therapy, United States Veterans' Bureau; Consultant in Physical Therapy, Ring Sanatorium. Second Edition, Revised. 436 pages with 135 illustrations. Philadelphia and London: W. B. Saunders Company, 1932. Cloth, \$6.50 net.

A few years ago, there was considerable disagreement as to the value of x-ray and radium therapy. There were some physicians so enthusiastic that no claim seemed to be too exaggerated. Others saw in these new physical agents little hope of improving the outlook for any disease. When instruments had been perfected, dosage standardized, and large series of cases studied, it became apparent that these methods of treatment were of great value when properly applied either alone or in conjunction with other treatment. To a lesser degree, ultraviolet radiation has also been standardized, but the various types of electric current are still being used without any degree of understanding of their physical effects and the therapeutic results. A book which attempts to set forth extensive experiences of two men, which makes no exaggerated claims for any single method of treatment, must of necessity fill a long wanted need for illumination on these much disputed points.

The first part of the book deals with the physics of electricity and a description of the various types of current and the apparatus used to produce them. The technical descriptions are brief and concise. There is a detailed description of the methods of application of diathermy electrodes to various parts of the body. The electromagnetic spectrum, hydrotherapy and massage are described in brief.

The second part of the book deals with the application of physiotherapeutic measures in the treatment of arthritis, low back strain, lumbago, myositis, sciatica, neuritis, and neuralgia. The authors insist upon accurate diagnosis before treatment is instituted. They do not advise physiotherapy to the exclusion of other methods of treatment, but rather in conjunction with them. They advise not one method of physical therapy to the exclusion of others but the combined use of several methods. No mention is made of therapeutic fever in the treatment of arthritis and paresis. Little space is devoted to electrosurgery.

The last part of the book is devoted to the methods of treating a large variety of diseases and for the reader's convenience, the diseases are arranged alphabetically. In this part of the book the reader is struck by the conservativeness of the authors. Of pneumonia, they say, "at least diathermy should be considered as a possible adjunct to other treatment". Of the use of diathermy in asthma, they say, "it may relieve spasms". Of diathermy in diabetes they say, "it may decrease the required dosage of insulin by over half". Of galvanism in the treatment of fibroids, they say, "rarely this will be beneficial in small growths". Of diathermy in gastric ulcer they say, "if you are sure that no hemorrhage will result, then diathermy will relieve the

pain". One finds this chapter filled with such indefinite statements as the following: "Here the ultraviolet light may be helpful", "these methods occasionally may secure results", "some cases improve; some do not; and others are made much worse". The vagueness of these statements is due, in the reviewer's opinion, to the unsettled state of our knowledge and to the honesty of the authors.

There can be no doubt of the psychological value of high frequency currents in the treatment of neurasthenia, hysteria, psychic impotence, and insomnia. The noise of the machine, the sight of the spark, the odor of the ozone and the complicated looking control board is naturally an impressive sight for our average patient with his pseudoscientific knowledge. However, one cannot help but wonder about the wisdom of using autocondensation in the treatment of hypertension or of galvanism in the treatment of hemiplegia.

All these statements which may appear derogatory are an indictment, not against the authors, but against the present stage of our knowledge of physiotherapy. We are now reaching the end of the dark ages in this field of medicine and Granger's book throws a ray of light on a dark subject.

C. K. W.

Diagnosis and Treatment of Diseases of the Thyroid Gland: By George Crile and Associates. 508 pages with 164 illustrations. Philadelphia and London: W. B. Saunders Company, 1932. Cloth, \$6.50 net.

George Crile and the members of the Staff of the Cleveland Clinic have written a series of articles dealing with the various phases of thyroid gland disturbances. In the introductory chapter, written by George Crile, Jr., there is an excellent review of the history of iodine and its relation to the thyroid, with a summary of the experimental work upon which our present knowledge is based. *The Doctor Crile* has written chapters on malignant tumors of the thyroid, endemic goitre, malignant goitre, thyroiditis, thyroglossal cyst and several chapters on operative technic. When he writes, "what quinine is to malaria, thyroidectomy is to hyperthyroidism and thyroid extract to hypothyroidism", one sees him as a practical surgeon. When he writes, "this hyperpermeability accounts for the keen and abnormally active brain which in a child is matured beyond its years, for the exalted emotions, the tears that come easily, the brilliant eyes, vivid personality. Life is on a sensuous edge . . .", one sees his poetic personality. When one reads, "the state of universally increased hyperpermeability of the billions of cells in the body, whereby is conferred upon the body increased activity both as to growth as a whole and to function, is clinically known as hyperthyroidism", one sees a third phase of Crile's character—the dreamer and scientist.

In hyperthyroidism, every part of the body is keyed up to a high pitch and symptoms are encountered in every organ. Excellent chapters describe the cardiac disturbances associated with hyperthyroidism, diseases of the skin encountered in hyperthyroidism and hypothyroidism, changes in the eye, disturbances of the joints and disturbances in carbohydrate metabolism. Other chapters deal with the differential diagnosis of Graves' disease

and with the association of hyperthyroidism with tuberculosis and syphilis. Others deal with x-ray observations in intrathoracic goitre and malignant goitre, and with the results of radiation in Graves' disease and carcinoma of the thyroid. Other chapters deal with indications for operation, the pre-operative and postoperative care, anesthesia, nursing care, the technic of operation, the complications and end results.

Except in the chapter on iodine and its relation to metabolism, there is no attempt to summarize the literature, each author describing his own experience with the vast wealth of clinical material which has passed through the Cleveland Clinics. A book of this type should appeal to those practicing any specialty for the effects of disturbed metabolism may first be manifested in any organ from the crown of the head to the sole of the foot.

C. K. W.

DISCUSSION

Of Dr. Sellers' Paper

(Continued from page 188)

Dr. J. M. Weldon (Mobile): I want to compliment Dr. Sellers on the way he has handled this subject. He has left very little for me to say. He has gone into detail and I will confine my remarks to a few major points.

There is one thing I want to say in reference to the treatment of neisserian infection. You can treat it a lifetime and unless you eliminate the Skene's ducts you will never clear up the infection. That is very important.

I think we should all practice more prophylactic medicine and surgery. In doing this, we will have our patients come to our office six or eight weeks after delivery for final examination. In making your examination and discovering these recent minor or deeper lacerations, as the case may be, and by treating these, as the doctor suggested, either by chemicals or slight strokes of your cautery or the deeper ones by surgical repair, we prevent all the complications and after symptoms he enumerated.

I don't know of anything more annoying to a mother than to have a chronic vaginal discharge. These glands have to be destroyed. In the minor lacerations or erosions, light strokes of the thermocautery will clear them up in a short time.

One other condition I wish to lay a little stress on is the cervical infection. In my experience I have found about one-third of the sterility cases due to cervical infection, and about one-third to tubal involvement. We also know that about one-third of the sterility cases are due to the males instead of the females. It is a hard task to get the males to come to our office to be checked.

I have gotten about twenty per cent results in sterile cases, due to endocervicitis after treatment. I have found that fifty per cent of sterility in women is due to tubal involvement. Oftentimes you will have your patients go to hospital for curettement for sterility. This curettement is prob-

ably indicated. In other words, until you have done a Rubin test and know the tubes are patulous, you are not justified in subjecting your patient to a curettement.

I have gotten about the same percentage of results from the insufflation of the tubes as I have from treating the endocervicitis. Lots of times there will be a little plug of mucus blocking the tubes. It doesn't take much pressure to dislodge this. You will find this to be the case in most of the instances where the tube is not completely blocked but there is some partial obstruction, other than a stricture.

Differential diagnosis between a pelvic inflammatory condition and ectopic pregnancy comes within the scope of gynecologic office treatment. In addition to the history of the case and a complete analysis of the symptoms, the Asheim-Zondeck test, or one of the modifications, is of definite assistance. This test has been proven to be ninety-eight and one-half per cent accurate. These tests will give a negative reaction, however, in case of a dead fetus, if death has existed long enough to sever the physiologic contact between the placental circulation and the mother's blood. When this physiologic contact has been severed then you get a negative reaction.

I heartily agree with the doctor in the employment of a pessary. If you have a patient come to you within six or eight weeks after delivery, and you find a retroversion without any inflammatory conditions or adhesions, a proper fitting pessary with knee-chest exercise will relieve the patient.

Again I would like to thank Dr. Sellers for his presentation and the manner in which he has handled the subject.

Truth About Medicines

NEW AND NONOFFICIAL REMEDIES

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Nonofficial Remedies:

Pentnucleotide.—The sodium salts of the pentose nucleotides from the ribonucleic acid of yeast. Pentnucleotide is proposed for use in infectious conditions accompanied by a leukopenia or neutropenia, such as agranulocytic angina. It is marketed in the form of Vials Pentnucleotide, 10 cc. Smith, Kline & French Laboratories, Philadelphia, Pa. (Jour. A. M. A., October 1, 1932, p. 1175.)

Liver Extract—Parke, Davis & Co.—A light brown granular powder representing a water-soluble fraction of mammalian liver, which contains the substance effective in the treatment of pernicious anemia. It

is supplied in vials containing an amount of powdered extract (3 to 3.5 Gm.) obtained from 100 Gm. of fresh liver. Parke, Davis & Co., Detroit.

Liver Extract (Intramuscular).—Parke, Davis & Co.—A sterile aqueous solution, containing the nitrogenous nonprotein fraction G of Cohn et al. obtained from fresh mammalian liver. Liver Extract (Intramuscular)—Parke, Davis & Co. is used in the treatment of pernicious anemia. It is supplied in the form of 2 cc. glaseptic ampoules, each cc. containing the active material obtained from 5 Gm. of liver. Parke, Davis & Co., Detroit.

Undulant Fever Bacterial Vaccine.—A heat killed suspension in physiologic solution of sodium chloride of *Brucella melitensis* (The Journal, February 6, 1932, p. 480), var. abortus (bovine type, 50 per cent; porcine type, 50 per cent), preserved with 0.5 per cent of phenol. Each cubic centimeter contains six billion killed organisms. The product is marketed in packages of six 2 cc. vials. Jensen-Salsbery Laboratories, Inc., Kansas City, Mo. (Jour. A. M. A., October 8, 1932, p. 1262.)

Biliposol.—A complex compound of high molecular weight, the chemical structure of which has not been established, combining bismuth and *α*-carboxethyl-*B*-methyl nonoic acid. It contains about 45 per cent of bismuth. Biliposol is proposed as a means of obtaining the systemic effects of bismuth in the treatment of syphilis (see Bismuth Compounds, New and Nonofficial Remedies, 1932, p. 100). It is marketed in 2 cc. ampoules. Ulmer Laboratories, Minneapolis. (Jour. A. M. A., October 22, 1932, p. 1424.)

Gas Gangrene Antitoxin (Combined).—An anaerobic antitoxin (New and Nonofficial Remedies, 1932, p. 359) prepared by immunizing horses against the toxins of *B. perfringens* (*B. welchii*) and vibrion septique. The product is marketed in packages of one syringe containing 10,000 units of perfringens antitoxin and 10,000 units of vibrion septique antitoxin. Eli Lilly & Co., Indianapolis, Ind.

Tetanus-Gas-Gangrene Antitoxin (Combined).—An anaerobic antitoxin (New and Nonofficial Remedies, 1932, p. 359) prepared by immunizing horses against the

toxins of *B. tetani*, *B. perfringens* (*B. welchii*), and vibrion septique. The product is marketed in packages of one syringe containing 1,500 units of tetanus antitoxin, 1,000 units of perfringens antitoxin and 1,000 units of vibrion septique antitoxin. Eli Lilly & Co., Indianapolis, Ind.

ACCEPTED DEVICES FOR PHYSICAL THERAPY

The following have been accepted by the Council on Physical Therapy of the American Medical Association for inclusion in its list of accepted devices for physical therapy:

Barach-Thurston Solarium Oxygen Tent.—This unit is claimed to be an adjunct in the treatment of anoxemia resulting from acute pulmonary edema, coronary thrombosis, cardiac decompensation, pneumonia and carbon monoxide poisoning. The oxygen tent consists of an air-conditioning and oxygen enriching unit, connected to a rubberized tent canopy supported above the bed, for the purpose of administering to a patient oxygen or a combination of oxygen and carbon dioxide. It is capable of maintaining therapeutic air environment at or below room temperature. Fan speed and volume of circulation are controlled by an electric motor-blower with multistep rheostat. Oxygen Therapy Service, Inc., New York. (Jour. A. M. A., October 15, 1932, p. 1352.)

Burdick Super-Standard Air-Cooled Lamp.—The Super-Standard Air-Cooled Lamp is the trade name for an ultraviolet radiation lamp. The ultraviolet radiation generator (the burner) used in the lamp consists of a quartz tube containing mercury in a vacuum. The mercury lies in a well at the cathode end of the burner. The other, or anode, end is fitted with a tungsten target. The metal lead-in wires are sealed in the fused quartz through intermediate steps of glass with decreasing coefficients of expansion. This forms a vacuum seal with a capacity for withstanding extremely high temperatures. The Super-Standard Air-Cooled Lamp is claimed to produce ample ultraviolet radiation to protect against and cure rickets in children. Burdick Corporation, Milton, Wis.

PROPAGANDA FOR REFORM

Misleading Vague Claims Such As "Recommended by Physicians, Medical and Health Authorities, Nurses, Dietitians, Hospitals, and Sanatoriums" and Equivalent Statements for Specific Foods.—The Committee on Foods reports that vague claims of recommendation, approval or use by physicians, health or medical authorities, nurses, dietitians, hospitals and sanatoriums for specific foods and statements of similar import in food advertising are misinformative and convey misleading implications of unique nutritional or therapeutic values, or that these professions or institutions as bodies have specially investigated and passed scientific or professional judgment on the particular products, which is not true to fact. Proper and correct explicit statements of special uses for or values of individual foods, or statements based on special studies by recognized authorities are permissible. (*Jour. A. M. A.*, October 8, 1932, p. 1263.)

Vague Use of Terms "Balanced" or "Scientifically Balanced".—The terms "balanced" and "scientifically balanced" as applied to individual foods or to their carbohydrate protein fat, vitamin and mineral content are vague in meaning, are usually unsupported by fact, and are misleading by implying that the respective nutritional elements are naturally or purposefully proportioned one to another to provide special or unique nutritional values which adapt the foods to specific uses. Presumably the term "balanced" as used in advertising for any one food is intended to signify either that it is a complete diet containing ideal proportions of proteins, minerals, vitamins, fats and carbohydrates for optimum nutrition or that two or more of its food essentials content are ideally proportioned to meet optimum nutritional needs. The intended significance, whatever it may be, should be explicitly stated; however, such statements shall be used only if correct for the food as used in the diet. (*Jour. A. M. A.*, October 8, 1932, p. 1263.)

Convalescent Serum in the Treatment of Poliomyelitis.—The status of the treatment of preparalytic cases of acute poliomyelitis seems to require clarification. Although prevailing clinical opinions as to the effi-

ciency of the treatment have been optimistic, few investigations have been adequately controlled. In two recent reports of controlled therapeutic tests, the evidence provided is not encouraging. Kramer, Aycock, Solomon and Thenebe record eighty-two cases about equally divided between those who received convalescent serum and those who did not. The Boston investigators concluded that their study offered no statistical evidence that convalescent serum is effective. Together with members of the poliomyelitis committee of the New York Academy of Medicine and his associates in the municipal hospitals, Park studied a total of 927 preparalytic cases of poliomyelitis, 519 of which were treated with convalescent serum; 408 patients were not given serum. The results of this study likewise does not afford statistical proof that the use of serum has any value in cases in which the cells of the central nervous system are already involved. The fact that the two controlled therapeutic tests gave similar results suggests that heretofore too much confidence has been placed in the treatment with convalescent serum. The need now is for additional evidence based on controlled studies which take into account the variants that make the problem complex. (*Jour. A. M. A.*, October 8, 1932, p. 1266.)

Professor Puckner and the Council on Pharmacy and Chemistry.—The death of Prof. William A. Puckner on October 1, after more than twenty-six years of service as Secretary of the Council on Pharmacy and Chemistry, marked an epoch in the work of that body. In February, 1905, the Board of Trustees adopted a resolution creating the Council, and Professor Puckner took office as Secretary on March 1, 1906. It is interesting to realize that three of the members of the Council at its inception—namely, Drs. George H. Simmons, Torald Sollmann and Robert Hatcher—are still members of that body and that they with Professor Puckner were a vital force in its activities during its first quarter century. The Council has aided in the elimination of secrecy in medical prescription; it has discouraged misleading statements; it has standardized new preparations before their inclusion in the Pharmacopeia, and it has brought the medical profession of this country to a better realization of scientific the-

rapeutics, than obtains anywhere else in the world. In its work the Council has had the approval of the majority of the medical profession, if not their constant cooperation. In 1909, shortly after taking over his duties as Secretary of the Council, the vision of Professor Puckner became so impaired that it was necessary for him to give up laboratory work entirely. Nevertheless, his memory was so remarkable, his grasp of affairs so embracing, and the force of his character so tenacious that he carried on his work efficiently almost to the day of his death. As Secretary of the Council he exercised a rare judicial attitude toward the problems that came before him, at the same time evidencing a scientific point of view in his evaluation of both laboratory and clinical evidence. The Board of Trustees will, at its next meeting, select a successor to the man who served as field marshal in the campaign for scientific therapy during the last twenty-five years. His position brought on him not infrequently bitter attacks and even the enmity of some of the commercial interests that considered themselves damaged by the Council's work. The next epoch in the career of the Council should have the cooperation from practicing physicians so complete as to indicate to manufacturers in the field of pharmacy the necessity for maintaining scientific standards if they wish medical support. (Jour. A. M. A., October 15, 1932, p. 1354.)

Irradiated Surgical Antiseptic.—The discovery in medicine of any new technic or process leads promptly to extended research with similar measures. Last year, Eising reported encouraging results by treating purulent wounds with irradiated petrolatum. This report led Ross to test the effects in vitro of such irradiated surgical dressings. Briefly, Ross found that a 2:1 mixture of petrolatum and hydrous wool fat, after ultraviolet irradiation for four hours, had acquired a sufficient bactericidal power to kill *Staphylococcus aureus* and *Bacillus pyocyaneus* within twenty-four hours. Ross is inclined to attribute the new antiseptic properties to "secondary ultraviolet emanations" held by the petrolatum-hydrous wool fat mixture, a conclusion previously drawn by Eising. There is nothing in Ross's data to suggest a clinical superiority of this unknown "emanation"

antiseptic over ordinary commercial antiseptics added to nonirradiated mixtures of petrolatum and hydrous wool fat. Far more extended and controlled researches are necessary before such results are permitted to breed new proprietary remedies. (Jour. A. M. A., October 15, 1932, p. 1356.)

BiSoDol Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that BiSoDol (BiSoDol Company, New Haven, Conn.) is offered to physicians for use in "The Early Treatment of Colds" and in the treatment of "colds, rheumatism, cyclic vomiting and other conditions associated with an acidotic symptom." The Council on Pharmacy and Chemistry found BiSoDol unacceptable for New and Nonofficial Remedies because it is an unscientific mixture of indefinite composition, offered to physicians with extravagant and unwarranted therapeutic claims under a name which is not descriptive of its composition. The Council endorsed the conclusions of the Council on Dental Therapeutics of the American Dental Association (J. Am. Dent. A. 19:1427, (Aug.) 1932). According to this report, BiSoDol is stated on the principal container to offer "A rational and effective method of re-establishing the normal alkalinity of the body without danger of systemic disturbance"; no statement of composition other than "The presence of Malt Diastase and Carica Papaya Compound makes it valuable in digestive disturbances," appears on the container; and in the advertising issued to dentists, it is stated to be "composed of Sodium Bicarbonate and Magnesium Carbonate, Bismuth Subnitrate, the amylolytic enzyme, Diastase, the proteolytic enzyme, Papain, and Oil of Peppermint." According to the chemist's report (of the Bureau of Chemistry of the American Dental Association, BiSoDol is essentially three parts of magnesium carbonate and four parts of baking soda to which a little oil of peppermint has been added. The amount of bismuth subnitrate in a single dose, approximately one-fifteenth of the average daily dose, is so small that for all practical purposes it might as well be omitted. (Jour. A. M. A., October 29, 1932, p. 1511.)

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THE JOURNAL

OF

The Medical Association of The State of Alabama

Published Under the Auspices of the Board of Censors

Vol. 2, No. 6

Montgomery, Ala.

December 1932

THE DEVELOPMENT OF THE AMERICAN MEDICAL ASSOCIATION*

SOME OF ITS POSSIBILITIES

E. H. CARY, M. D.
Dallas, Texas

It is a very great pleasure, I can assure you, to come back to Alabama. This life, when honored as I have had the pleasure of being honored, is an active one. I was recently in Tennessee and Virginia; from there I went to San Antonio and thence to Des Moines where I was last week. One of my friends in Des Moines wired me, "the train is a very poor one coming out of Kansas City, and I would like for you to take the American Airways". That brought up the question of whether I should ride an airplane, and put me in mind of Colonel Buckner's steer.

I do not know that you have heard of Colonel Buckner's steer. The Colonel lives in Dallas. He has a ranch out from Dallas, on the T. & P. Railroad. His ranch line runs some twenty-five miles parallel to the T. & P. Railroad. The Colonel not long ago had some visitors from Philadelphia. They heard of the possibility of oil. They knew of this ranch and came out to inspect it. The Colonel was entertaining them and during the course of the evening told about the wonders of the ranch. He spoke of a wonderful steer. He said, "I have a steer out there that meets the Sunshine Special every morning at the east line of my ranch and outruns that train to the west line of my ranch. It browses around, and at a certain time in the afternoon the eastbound Sunshine Special comes along and he outruns that eastbound Sunshine Special to the eastern line of the ranch." Well, they had all gotten a little mellow and were very

much impressed with the story of the Colonel's steer. So, when the Colonel went home that night, he told his colored man, "John, I told those people that yarn I tell about the steer," and added, "If they come out here and want to see that steer, I am not here." So, sure enough they came out to see the Colonel and inquired of the negro, who met them, where the Colonel was. He replied, "The Colonel is not here." When they asked where he had gone, the darky said, "He has gone to Memphis, St. Louis, Cincinnati, Kansas City and Omaha." "Well", they said, "we did not come out here so much to see the Colonel as we did to see that wonderful steer he was telling us about." The negro says, "Lawdy, Captain, de Kunnel is riding dat steer."

Now, the interesting thing from my standpoint is to be able to come and meet so many charming people. Of course, the subject I am trying to present tonight is "The Development of the American Medical Association and Its Possibilities".

Those of you who are interested in the history of the American Medical Association recognize that it is the result of the work of those fine spirits who found one common point of interest. That common point was education. It was back in 1847 that these men, interested in education, found a basis on which to meet and to discuss the possibilities of medical education in this country. That was a source of interest to them, but it never really got very far; but on and on, the group attempted to organize and to make themselves effective. They were not able to do it until they created this great organization of ours in 1902, at which time there was formulated a form of government which we have been operating under all these years; truly representative, truly democratic, making it possible for all the states of this nation to be properly represented.

*Address delivered at the public meeting of the Association, in annual session, Mobile, April 20, 1932.

This formative period was interesting because it found American medicine without much leadership and without real purpose. When this organization came into being, then its active minds were able to guide its destiny, were in a position to do that which they had never been able to do before—to create committees and councils and promulgate ideas which were put into force throughout the country.

The motif of the organization was education. In 1902, when the organization was brought into being, standards of medical education were very low. Those of you who are familiar with advances made in the standards realize that even as late as 1910 medical education in this country was in a most chaotic state. It is true that our leaders found help in the Carnegie Foundation, that they found help in Mr. Flexner, but the motif, the great desire to improve the status of medical education in this country, came from within the profession itself. It was the profession that led the fight to purify medical education, to raise standards which, I dare say, no other profession has been able to do in such a masterly way.

It is true that we are proud in having possibly the highest standard—a more universally accepted standard in our schools than any other nation of the world. This was made possible by our medical men who fought to standardize their own teachings, and to bring in order that kind of education which is accepted as the best throughout the land.

There was a time within your memory when medical education was at a low ebb. I had the experience myself of coming into the medical education field, as a teacher in and Dean of a proprietary medical school. The proprietary medical school passed immediately into a university, and we were able to raise the standards of medical teaching and keep pace with other schools throughout the country.

The schools of the South were without funds but rapidly readjusted themselves,—many went out of business,—but finally the schools of the South became as good as any.

It was the machinery of the American Medical Association which made it possible to develop the highest ideals of the profession, and we are proud that the Association

had for its object the advancement of medical education.

We, also, as an Association had some other objects which I think were worth while. We were able to bring about certain changes in the national pure food law. I am quite certain you are aware of what Dr. Wiley did; I am quite sure you are familiar with the help President Roosevelt rendered to this whole movement, but the impetus came originally from the American Medical Association. The pure food laws that are in effect today, and which are protecting the American people, were largely the outgrowth of the efforts of the men who were leading our profession and who made the effort at the right time.

We can point with pride to the accomplishments of the pharmaceutical council. The Council on Pharmacy and Chemistry was organized in 1905 and found a most deplorable situation throughout the country as regards the kinds of medicine being used by the medical profession. Of course, it goes without saying that the citizens themselves knew nothing of medicine: the country was being flooded with all kinds of patent medicine for which the most preposterous claims were made. Through the Council, the American Medical Association examined the claims made for these remedies, and was able to handle the medicines which were being prescribed by the doctors of this country and to see that every preparation was not only standardized, but carried all the information that was necessary for the doctors to know. The American people have profited by this one thing, for, more than they can ever know, it is a great contribution toward the welfare of the people.

Today no manufacturer can place in any of the journals of this organization advertisements of any preparation that does not go through the Council of Pharmacy and Chemistry, and is thoroughly understood and approved. This is not true of the other journals of this world. The British Journal,—the journals of other nations, permit preparations to be advertised which have no standing in our journals. So, we point with great pride to this Council.

With regard to the science of medicine, the American Medical Association has done things and is doing things that are

keeping the Association abreast of the time in the science of medicine, and is adding the various discoveries of science to the art of medicine.

Allow me to call to your attention the Journal of the American Medical Association, the greatest medical journal published in this world. We, as you know, publish one hundred thousand of these journals weekly, one of the most outstanding accomplishments of this organized group of men. We now have many special journals which have been the outgrowth of brilliant stars in the medical profession who have organized and started some journal in professional lines, and finally growing old, were likely to see their life work destroyed,—such as the Archives of Ophthalmology, the life work of Knapp, a great ophthalmologist. These journals, one by one, have been taken over by this organization and are today published by the American Medical Association. All the various specialties have their special journal which is being published in a manner entirely satisfactory to the Boards created to run them. We have the feeling and know that from now on these journals will be perpetuated. You can see what an array of journals goes out from this organization to our profession throughout the country to carry the most scientific information that can be developed. We have just developed some other things of interest that I will mention before passing from this particular side of the accomplishments of the American Medical Association.

Some of you may know we have recently taken over the *Index Medicus*. That is an accomplishment of which I think you ought to know something. The government and the Carnegie Foundation both had this particular job in hand and did their best. However, it was under divided control. The American Medical Association took over the task and for several years now, has given you an opportunity to see at once the literature of the world, so far as fourteen hundred medical journals are concerned. Naturally it is a task of no mean importance. It costs a great deal more money than comes from it. It is one of the philanthropies, you might say, of the American Medical Association. No library in the world would be without it.

The Directory of the Association, as you know, is published with one hundred and fifty-six thousand names—an authentic list of names of those who are practicing. Every name in the directory has a biography and that biography in the hands of the Association represents practically the entire life work and accomplishments of the men named therein. Anyone contributing anything in medicine, anyone doing anything of consequence today, is noted and properly tabulated, and is carried as a contributor under that particular name. So, we have a record of every man practicing medicine in America—an authentic record and one which can be had by the membership of this organization.

Then, too, the American Medical Association is constantly doing something for the public. You may not be familiar with the recent suit on the part of one Mr. Baker, who had his broadcasting station and was rapidly developing an enormous practice with preposterous claims of curing cancer. If there is any class of people in the world more susceptible to suggestion and who are more easily robbed than those suffering with cancer, we do not know them. Yet, there are men in this country who take advantage of this particular phase of human misfortune and who are attempting to profit from it. It was stated by Baker that he was making seventy-five thousand dollars a month; that the publication in the journal of his remedy and his quackery had caused him immediately to lose the difference between seventy-five thousand dollars a month and seven thousand dollars a month. I am quite sure you gentlemen would be satisfied with seven thousand dollars a month. This brought about a suit for five hundred thousand dollars. It was recently settled. The American Medical Association won it. The Association is constantly being sued for attempting to expose fraud and by doing that the organization opens itself for suits for slander and so forth. Yet it goes on, and I am proud to say tonight that not one single time has this organization lost a suit. Every time the Journal has published any information whatever that had any bearing on quackery or wrong-doing or anything else in the field of medicine, the Journal has been sustained.

It shows that the Journal has the ability to get the truth and the courage to tell it.

We have seen in this process of education many changes. One of the changes which has come about is this. Young medical men are all exposed to the same kind of instruction and the same kind of clinics and graduate with about the same training. The only essential difference in the young medical men graduating today is to be accounted for in the inability of schools to instill into a man personality. On the other hand, the graduates have a little different attitude towards the practice of medicine than had the graduates of my time. Those leaving the schools today are living under somewhat different conditions than those many of us had to contend with. However, we have, in all probability, within the group of the recently graduated the same desire to serve, the same willingness to do charity when it is needed, or when they believe they should do it, but there is a rather definite feeling on the part of the young fellow that he has paid a rather good price for his education, that he has given time and money, and having done that, should have some kind of reward.

The question is, What are we going to do about the problems confronting us and this type of doctor we have educated? In Illinois recently, at the University of Illinois Medical School, there were two hundred twenty-five men and the question was asked them. "How many of you are going to the country to practice?" and only five raised their hands,—five out of two hundred twenty-five were going to the country. We realize that just a few years ago there were approximately thirty thousand doctors in communities of one thousand people or less. In the course of fifteen years that number has dropped very materially; today sixty per cent of the men who are practicing in these smaller communities are men who come within the age group of fifty to sixty years and twenty-five per cent of them are men who come in the age group of sixty to seventy years. What are we going to do about this question of having educated our young men to rely upon certain things, to expect certain laboratory facilities? What are we going to do about getting them back to the country? It is the same story everywhere we go. Men

are not preparing themselves for rural practice.

A study of this subject, made a few months ago by the Dean of the Albany Medical School, developed the fact that in all probability the School would have to more definitely limit its students to men who come from the country. It has been my observation that men who come from the smaller communities do not always go back, but the tendency is for them to do so. It seems, then, that this question of caring for the people of the country is largely a matter of getting young fellows from rural areas to enter medical schools. Since the executives of the schools have a very large waiting list, they can exercise some arbitrary power in making places for such boys, a thing which, in all probability, they have not been doing.

I was recently in Iowa. In that state physicians have been trying to devise a plan whereby the indigent may receive medical care. Some success has been attained. Twenty-five years ago the members of one county medical society decided that so far as they were concerned they would not continue to practice medicine for the poor without proper consideration on the part of the public. Their avowal was a thing unheard of in most parts of the country; and yet today in Iowa there are some twenty-seven county medical societies, one of them in a city of one hundred-forty thousand people, that are using this plan.

Under the plan, the societies through their members enter into a definite contract with the county commissioners,—the contract is a perfectly equitable one,—in which the members of the society promise to take care of the county's indigents for a stated sum. The money goes to the county society to be used as the society sees fit. In some instances it is used for membership dues and educational purposes. In others it is used to defray the cost of general meetings where invited guests are in attendance. In still other instances the membership divides the money left over according to the character of work which has been done.

This plan, which has worked out so well in Iowa, is popular with the people. They realize it is a definite contribution on the part of physicians to social betterment. It has worked out better for the people than

they ever hoped it would. It no longer appears to anyone that it is a matter in which the Iowa doctors are selfish. On the other hand it commends itself as a proposition in which indigent people are cared for adequately according to a definite plan.

I do not know that the medical profession throughout the country will follow Iowa's example. I am not trying to intercast you in the plan. I know it has been adopted to some extent in Indiana. It is true that we are here to serve the people and that under no condition whatever would we turn our backs upon human suffering. Certainly it is the desire of every medical man to do his duty, but there is no good reason why we cannot in our own societies, in our own organizations, take the people themselves into our meetings,—there is no reason why we cannot make the public see how dire is the necessity for some rearrangement as regards the medical practice we have today. I am quite certain the problem of young men not going back into the country is a question largely of economic cause. I know that bright lights are alluring; I know that hospital life is most attractive; I know we have educated men to practice medicine with the x-ray and the aid of a nurse and laboratories and other facilities. However, these facilities can be had in counties where they practice, provided the responsibility for that particular expense is placed where it belongs,—upon the public. With such an arrangement we can see young men going back to the country to fill the places of those now getting old and who will in due time pass off the scene.

There are any number of little towns of one thousand people or less without a doctor. Let us take, for example, Saskatchewan, Canada,—a section that is cold and dreary in the winter time. Nevertheless, physicians tried to live there. They did their best to serve the people but being unable to make a living they were forced to leave. In the face of this situation, of many communities without a physician, what happened? The communities got together, provided a budget and set apart five thousand dollars for a physician. Today in Saskatchewan there is a man forty-five years old guaranteed this sum a year and a little hospital. He is the center of a very

busy existence, with a great deal of consideration shown him from every side. His practice is a happy one, and everybody is cared for. In all probability he will live there until he dies.

I offer for your consideration the fact that the medical profession does not desire to prey upon the poor. Yet the medical profession has a right to look forward to a time when the economic affairs of the public will be on a sound basis, and when, it will be possible for a man to live and to live comfortably in any community where he may practice. To know how soon this is to come about, one needs to think only of the continued lack of medical service in smaller communities and how the need will increase on the death of those fine men who have been there for so long. Face to face with the problem, the public will, in my opinion, find a way whereby a medical man can be cared for.

The young physicians whom we have educated are no more desirous of practicing medicine for money than we, and yet they are meeting changed conditions and different circumstances. They are not going back to the country. We must devise some plan whereby the people needing medical protection will bear the responsibility.

These men must be offered some economic relationship which is different from that which has existed in the past.

How many doctors are needed in a community? It has been said that one doctor to about fifteen hundred people, under present circumstances, would be sufficient. Many of you younger than myself can recall towns of a thousand people served formerly by eight or ten doctors. Of course they did not depend altogether on the community itself. They went into the country for some distance. Conditions have changed. The science of medicine has wiped out, practically, a vast number of diseases which we rarely hear anything about now. This being true but few doctors are needed in smaller towns.

There is one other thing. What do we do for one another in the practice of medicine? I think people are pretty well sold on the idea that the science of medicine is far too great for any one person to encompass. The science of medicine and its application is beyond the capacity of any one

man. People know that. We turn the question around then and say, What is the answer?—group medicine. We have one hundred and forty thousand doctors practicing medicine and less than two per cent of them are practicing group medicine. Now, group medicine is very satisfactory even though it has its drawbacks along with its possibilities. If group medicine can be practiced without commercialism and without many of the things which very often creep into it, it would be a very satisfactory answer to the question.

It is true that the medical profession can co-operate today in a much better way than it could a few years ago. Another thing that the public demands is a complete and thorough examination. It does not believe that one man can do everything. Believing that, feeling that, we have to say this to them and it is true: that the vast number of diseases which confront the human race can be handled, in large part, by one man. It is said that a general practitioner can take care of ninety per cent of these troubles. I do not know whether I should say seventy-five or ninety per cent but I do know that a large percentage can easily be cared for by a good general doctor.

Have we as doctors, individually or collectively, any definite plan of our own whereby we lend to each other properly that knowledge which is necessary to make a correct diagnosis? We will all admit a correct diagnosis is the end desired; that an incorrect diagnosis, at whatever cost, may be the most expensive medical care a human can have. If a correct diagnosis is so important, it seems that medical men must develop a plan which is useable, one which does not necessarily involve partnership, but which does involve a contribution of their knowledge, skill and experience for the purpose of bringing to the individual a correct solution for his troubles. I believe that we fail to realize the wisdom of this practice. I think we all know about it but do not practice it as we should. I think every organization should feel a need of developing a plan whereby doctors may more definitely give to the patient all they possess in any given group. I say again it does not mean we have to be partners; it does not mean we have to practice partnership medicine, but it does mean that we

are cognizant of our responsibility to each other to bring together that force of intellect and experience necessary to give a patient a correct solution of his problem.

The question arises, of course, as to what plan you would offer. Time would be required for me to make suggestions but I will say it does contemplate this, that every patient should have the benefit of a correct analysis at a price the patient is able to pay. The high cost of medical care would largely disappear if we, in our own communities and in our own way, would co-operate more intelligently; if we would require the public to recognize its own obligation. Medical men should not carry more than their share of the burden. When we have done these things, we shall see that those responsible for the care of the needy and the underprivileged are willing to provide the necessary money to pay physicians for their service. You will find the middle class will have fewer troubles, and the rich,—nobody bothers about them; they can take care of themselves.

These problems confronting the medical profession can and will be solved by the profession itself. Of that I am confident. As medical men we shall find a solution. I want to again thank you for permitting me to come back to Alabama, my own native State, of which I am justly proud.

In the rapid progress of this mechanistic age, few people realize how adequately medicine has met the exacting demands. If medical and sanitary science had not outstripped progress in other lines of endeavor, we should have been wiped from the face of the earth through improved transportation with the sudden intermingling of all nations of the world with their varied diseases and their racial susceptibilities.

If our professional interests seem to be seriously threatened for the moment, may this not be largely due to our cherished altruistic traditions, our superficial methods of education and the present public absorbing interest in the general theme? Obviously a little learning is a dangerous thing. If we hope to retain public approval, and at the same time preserve our coveted independence, our necessary initiative, our individuality and our self-respect, we must teach the public the history of medicine.—*Moorman, South. M. J., December 1932.*

AVULSION OF THE PHRENIC NERVE IN THE SURGICAL TREATMENT OF PULMONARY TUBERCULOSIS*

NORBORNE R. CLARKE, JR., A. B., M. D.
Mobile

INTRODUCTION

The problem of pulmonary tuberculosis is a tremendous one. Aside from its therapeutic problems, of primary importance to the medical profession, it presents sociologic and economic aspects which render it one of the most complicated and difficult questions that confront modern civilization.

There is no known specific treatment for pulmonary tuberculosis. Until, and unless, a specific remedy is discovered, treatment of this disease calls for the judicious employment of all therapeutic resources of proven merit, to aid and promote the defensive mechanisms of the body in its struggle against infection by the tubercle bacillus.

Rest is the fundamental basis upon which the modern medical treatment of tuberculosis is built. In addition to scientific general rest therapy, other measures are of value. Chief of these are good hygienic surroundings, a nourishing easily digestible diet, competent medical observation and control, graduated resumption of bodily activity, and a carefully regulated life following the attainment of an inactive state of the disease. The role of the physician in this regime of medical care is of paramount importance. He should be a real student of tuberculosis and should have extensive knowledge and experience with the disease. He should be able not only to advise and to see carried out the ordinary hygienic treatment, indicated in all cases, but he should be able to at least quickly recognize an unfavorable progress and be prepared to deal promptly and effectively with such developments or complications as may occur.

Rest therapy, along sanatorial lines, is sufficient in the majority of cases of early pulmonary tuberculosis. Successful treatment of this character depends upon a variety of factors, some of which are beyond our power to control. Chief of these factors are the stage at which the disease is diagnosed, the promptness and thorough-

ness with which treatment is instituted, the degree of inherent resistance to the disease which the individual possesses, and the economic and intellectual status of the patient.

In spite of every effort along conservative lines of treatment, many cases do not do well on it alone. The disease extends and active therapeutic effort along other lines becomes urgently indicated. In addition, cases often, when first seen by the diagnostician, present conditions which, experience with this disease has taught us, require surgical measures at the onset as a supplement to the regular medical care.

Much interest has been paid in recent years to the various surgical measures employed in the treatment of pulmonary tuberculosis. The most important commonly employed resources in the surgical treatment of this disease are artificial pneumothorax, avulsion of the phrenic nerve, and paravertebral thoracoplasty. These measures have all been subjected to thorough critical trial and their value is well established and appreciated by tuberculosis specialists generally.

Rest is the basis of treatment in both the surgical and the medical treatment of pulmonary tuberculosis. However, in the surgical treatment the aim is at local rest and inactivity for the diseased lung in addition to rest for the body as a whole. A thorough understanding of the indications for these surgical measures, and an intimate knowledge of the types of cases in which they may be effectively employed, are very essential. In general, it may be said that surgery is indicated in pulmonary tuberculosis when the involvement of the lungs is predominantly unilateral and the case has not responded well to a fair trial of conservative medical treatment. It is well to remember that, as a rule, pulmonary tuberculosis in the adult follows a well defined course. The disease, beginning as a unilateral involvement, usually in the apex of the lung, progresses locally for a while, eventually, in unfavorable cases, extending to and involving the contralateral lung. Infection of the sound lung almost invariably occurs by way of the bronchial tree system from the lung primarily the site of the disease. It can easily be appreciated how important it is for a progressing unilateral lesion to be rendered inactive before any

*Read before the Association in annual session, Mobile, April 19, 1932.

considerable degree of infection of the contralateral lung has occurred. The surgical attack on pulmonary tuberculosis consists in the collapse and compression of the diseased lung. Our effort is to put the lung at physiologic rest by mechanical means. Healing is thus promoted and extension of the disease, particularly to the contralateral lung, is prevented. Even in bilateral involvement, mechanical compression or collapse of the more extensively diseased lung is often successful. If the major source of infection and toxemia can be controlled or eliminated, the natural defenses of the body will often be able to overcome the disease in the less affected lung.

Collapse and compression of the lung may be attained surgically in several ways. Thus, in artificial pneumothorax air or gas is introduced in the intrapleural space resulting in collapse or compression of the lung. Phrenirexis or avulsion of the phrenic nerve brings about compression of the lung through paralysis of the diaphragm, which rises in the chest and remains comparatively fixed in a position of exaggerated expiration. This compresses the lung to a large degree and puts it relatively at rest. Paravertebral thoracoplasty is a more formidable surgical undertaking. It consists of compression of the lung through collapse of the thoracic cage which is brought about by resection of the ribs. This procedure is usually reserved for extensive unilateral disease, in which there are thick-walled cavities and massive dense pleural adhesions, and in which pneumothorax and phrenirexis are unavailing. Pneumothorax treatment, phrenic nerve avulsion, and thoracoplastic operations all have their particular indications and their own advantages and limitations. The purpose of this paper is to point out the place avulsion of the phrenic nerve occupies in the surgical treatment of pulmonary tuberculosis.

HISTORY

Stuertz, in 1911, induced hemi-diaphragmatic paralysis by section of the phrenic nerve, as a means of treating pulmonary tuberculosis. This operation, section of the main branch of the phrenic nerve, was called phrenicotomy. Sauer-

bruch, working independently, reported a series of five cases in 1913 in all of which he had performed phrenicotomy with beneficial results. Ochlecker published his results in three cases in 1913. The first of these had been operated upon in 1911. Considerable interest was aroused at the time due to the prominence and authoritative position of the workers sponsoring this new operation. However, it was soon found that in many cases the paralysis of the hemi-diaphragm was not permanent and that the results of the operation were not all that it at first seemed to promise.

In 1921, Felix published his important research upon the anatomy and physiology of the phrenic nerve. He found that simple division of the main nerve failed to permanently immobilize the hemi-diaphragm in from 25-40% of cases. He demonstrated that this failure was due to the presence of accessory phrenic nerve fibers entering the main trunk below the point of section. He then proposed the radical removal of the main nerve trunk together with its accessory fibers by evulsion and termed the operation phrenico-exairesis. This operation, now usually termed phrenirexis, is the one commonly used today and has been widely employed since 1922.

ANATOMY AND PHYSIOLOGY

The phrenic nerve is the motor nerve to the diaphragm. The lower thoracic nerves, particularly the 12th, aid somewhat in this innervation. However, the part they play is so small that their innervation is inadequate to prevent diaphragmatic atrophy or to permit of contractions following avulsion of the phrenic nerve and its accessory fibers.

The phrenic nerve is mainly a motor nerve although it contains some sensory fibers. It takes origin largely from the fourth cervical nerve but receives fibers from the third and fifth. In a large percentage of cases, there are additional fibers, constituting accessory phrenic nerves, arising from the fifth, third, fourth, or sixth cervical nerves. The main trunk of the nerve passes downward and inward under the sternomastoid muscle and on the scalenus anticus, from the level of the hyoid bone. It is covered and sometimes adherent to

the layer of deep fascia covering the scalenus anticus. At the base of the neck, it passes into the thorax between the subclavian artery and vein. From a position behind the sternoclavicular articulation, it then follows a course almost vertically downward, over the apex of the pleura and through the superior and middle mediastina, to the upper surface of the diaphragm where it breaks up into its terminal branches.

The diaphragm is a dome-like muscular sheet interposed between the thoracic and abdominal cavities. It is derived embryologically from the cervical myotomes which fact accounts for its cervical innervation notwithstanding its midposition in the body. The dome of the diaphragm with its convexity directed upward is divided into two secondary lateral domes by a median depression. The right hemi-diaphragm extends upward as far as the level of the fourth costal cartilage and rib, while that of the left reaches only to the fifth costocartilaginous junction. Contraction of the muscle fibres of the diaphragm depresses the summit of the dome thus increasing the vertical diameter of the thorax.

When the innervation of the diaphragm is destroyed by avulsion of the phrenic nerve, a complete hemi-paralysis results. The diaphragm rises passively into the chest to an extreme position of expiration. This rise of the paralyzed diaphragm is due largely to the positive intra-abdominal pressure acting from below and in less degree to the negative intra-thoracic pressure existing above. Following removal of the phrenic nerve, atrophy of the musculature of the diaphragm sets in and progresses for sometime after operation. Maximum rise is not observed until more or less complete atrophy has occurred. This may take as long as six months after phrenirexis. The average elevation of the paralyzed diaphragm is about 7-8 cm. at the end of inspiration and 3-4 cm. at the end of expiration, these changes being due to the so-called paradoxical movement of the paralyzed diaphragm. The reduction of lung volume by phrenirexis averages about 35% and corresponds to compression of the lung by a pneumothorax of several hundred cc., with a spirometer reduction of approximately 30%.

INDICATIONS AND CONTRAINDICATIONS

It is a difficult matter to outline dogmatically definite indications for any one of several surgical procedures that have as their purpose the accomplishment of virtually the same end. Conditions vary in individual cases and the clean-cut, perfectly defined, "text-book" indication is a rarity indeed in actual practice. Surgeons often differ somewhat in their opinions, experiences, and methods, although their results may be much the same.

In general, avulsion of the phrenic nerve is applicable and especially indicated in the following conditions:

1. Progressive, largely unilateral, tuberculosis of the lungs, in which artificial pneumothorax treatment is indicated but cannot be carried out due to pleural adhesions.
2. Cases in which pneumothorax has failed or has proven unsatisfactory due to the presence or development of some complication.
3. As a supplement or adjunct to pneumothorax treatment.
4. Cases presenting lower lobe lesions and basal complications.
5. As a preliminary stage or trial before thoracoplasty.

Unfortunately, it is often impossible to induce or maintain an effective artificial pneumothorax in cases wherein it is needed. The most common cause of such failure is the presence of pleural adhesions. These may be extensive enough to prevent the introduction of air into the intra-pleural space or may limit the compressibility of the lung so greatly as to make pneumothorax treatment ineffectual and its continuance inadvisable. Often in such cases avulsion of the phrenic nerve will be beneficial. Matson has estimated that, following phrenic nerve avulsion, the capacity of the chest on that side is reduced from one-sixth to one-third, with compression of the lung equivalent to that induced by the injection of 400-800 cc. of air.

At times, pneumothorax treatment has to be abandoned prematurely due to the development of adhesions which form during the course of treatment. Such adhesions usually follow effusion, becoming apparent after the effusion has been absorbed. The

lung may re-expand under fluid and become adherent to the sides of the chest or to the diaphragm. In such cases, phrenic nerve avulsion is often of value after pneumothorax treatment has to be discontinued. Many authorities advocate the use of phrenirexis routinely in conjunction with artificial pneumothorax. They maintain that the amount of air required is smaller, the intervals necessary between refills longer, and that the incidence of pleural effusion is markedly reduced. Others advise phrenic nerve avulsion only at the end of pneumothorax treatment, when it is decided to allow the compressed lung to re-expand. A constant, partial compression, induced by hemi-diaphragmatic paralysis, is of value in preventing full re-expansion of the affected lung and thus reduces the risk of reopening a healed cavity or reactivating a quiescent lesion.

It has been said that avulsion of the phrenic nerve affects the respiratory movements of the middle part of the lung appreciably, the movements of the apex slightly, and the movements of the base very greatly. Basal lesions are more affected directly by the compression induced by diaphragmatic paralysis than are lesions in the upper part of the lung. However, the latter often benefit indirectly through the alleviation of cough, the relaxation of adhesions, and the rest brought about by the cessation of the pumping action of the diaphragm. Phrenirexis is particularly of value in those cases of predominantly unilateral pulmonary tuberculosis in which there are troublesome basal adhesions of the lung to the diaphragm. Such cases generally exhibit the characteristic dragging ache and pain in the back, side and shoulder typical of diaphragmatic adhesions, and are often relieved by nerve avulsion. Many surgeons advise operation of the phrenic nerve as a routine procedure preliminary to paravertebral thoracoplasty. This is done to test out the contralateral lung and also to allow the mediastinum to become gradually adjusted to the difference in pressure on the two sides.

Avulsion of the phrenic nerve is contraindicated, as are other surgical efforts, as a rule, if the better lung is the seat of extensive, active tuberculous involvement. Generally speaking, cavitation of the con-

tralateral lung, involvement of more than one-third of its structure, and basal lesions contraindicate increasing its functional activity by the institution of collapse therapy on the worse side. As a matter of practice, it is unwise, perhaps, to employ measures, which may appear unusual or radical in the face of an obviously unfavorable prognosis. However, such a stern position is difficult to always maintain when we realize that our prognosis may be, and often is, mistaken. Far advanced bilateral cases have at times made a brilliant recovery, following the institution of compression therapy as a last resort.

It is often best to explain the conditions and risk to the patient and his family and allow them to choose the chance of being benefited. Even if the disease progresses to eventual death, symptoms, such as cough, expectoration, hemoptysis, and toxemia can often be palliated sufficiently to more than warrant the surgical effort and risk.

OPERATIVE TECHNIQUE

Operation on the phrenic nerve should certainly not be attempted by anyone untrained or inexperienced in surgery. The phrenic nerve lies deep in the base of the neck and often is difficult to identify, especially if its arrangement or position happens to be anomalous. A surgeon thoroughly familiar with this operation can perform the same with negligible risk but this implies the employment of skill and care and a thorough knowledge of the surgical anatomy of the neck. The phrenic nerve in the neck is in close proximity to such vital structures as the thoracic duct, the vagus, the long thoracic nerve, the sympathetic and brachial plexuses, large blood vessels, and the dome of the pleura. Any of these structures might be easily injured by an ignorant or careless operator.

A preliminary hypodermic of morphine is usually administered. The patient lies supine with head turned from the side which is to be operated upon. The shoulders should be slightly raised so as to make the base of the neck more prominent. The operative field, comprising the posterior cervical triangle, is sterilized and appropriately draped. The surgeon stands on the side of the operation with his assistant opposite. Local anesthesia by means of

1/2-1% novocaine and adrenalin solution is generally employed. The line of incision is situated transversely at the base of the neck, about an inch and a quarter above the clavicle. It begins at the posterior border of the sternocleidomastoid muscle and extends laterally for approximately two inches.

The skin and subcutaneous tissue are infiltrated with 1% novocaine and the skin, subcutaneous fat, and platysma muscle are incised. The external jugular vein is usually encountered at this stage. It can frequently be retracted out of the way but at times has to be cut and ligated. The superficial layer of the deep cervical fascia is then incised. Beneath this fascia is a thick layer of fat which should be carefully divided by blunt dissection. Proper retraction is very important at this stage. Long, narrow-bladed retractors are necessary in the small deep wound. Below the fatty layer lies the dense fascia which immediately covers the phrenic nerve and the scalenus anticus muscle. The nerve may be faintly visible through this fascial layer which must be incised in order to identify and free the nerve. When this is done, the phrenic nerve is seen lying on the surface of the scalenus anticus, passing downward and inward. It is the only large nerve in this part of the neck which has a mesial inclination.

After having been properly exposed and identified, the main nerve trunk is then directly infiltrated with a drop or two of novocaine solution. It is then grasped by a hemostat and divided proximal to the clamp. Then the nerve is slowly and steadily avulsed by being wound around the tip of the hemostat which can be steadied by placing it in the handle ring of another instrument. Care should be taken to free the nerve from adherent connective tissue as it is drawn out of the chest. Severe pain in the neck, shoulder or chest may require brief gas anesthesia at this stage. Usually, however, this is unnecessary. If as much as 12 cms. of nerve trunk are avulsed before rupture, permanent hemi-diaphragmatic paralysis is practically assured.

The wound is closed by two or three buried absorbable sutures placed in the fascia and platysma and the skin is approximated carefully with fine silk or horsehair

so as to prevent conspicuous scarring. No drainage is employed.

RESULTS

Patients are not disturbed to any marked degree by the operation, as a rule. The pulse rate is sometimes temporarily accelerated and there may be occasional slight, transient dyspnoea. Left sided cases sometimes exhibit mild digestive disturbances for a few days. This is thought to be due to change in the position of the stomach following the rise of the diaphragm. More sputum than usual is generally raised for several days following operation. This is due to the fact that the paralyzed diaphragm offers little resistance to upward intra-abdominal pressure thus making the cough more effective in ridding the lung of secretions. Patients often comment on the ease and effectiveness of coughing following operation.

My own experience with phrenic nerve avulsion has been confined to cases wherein pneumothorax treatment was indicated but could not be performed due to adhesions. A few operations have been done in cases which had been under pneumothorax treatment for two years or more before allowing expansion of the compressed lung. The results have been distinctly encouraging. There is no doubt that, properly employed, this operation deserves an important place in the surgical treatment of pulmonary tuberculosis.

SUMMARY

1. Phrenic nerve avulsion finds its chief usefulness in those cases of pulmonary tuberculosis wherein pneumothorax treatment is indicated but cannot be successfully performed.
2. The indications and contraindications for phrenirexis, as for compression therapy in general, should be well understood.
3. The operation is not dangerous in experienced hands but should be regarded as a major surgical procedure.
4. Results of phrenirexis are such as to definitely warrant this operative procedure in suitable cases.

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OUR STATE ASSOCIATION*

JERRE WATSON. A. B., M. D.
Anniston

There are multitudinous organizations in our country. If we were inclined to be critical, there is no doubt but that we would be able to find fault with all of them. But criticism carried to the point of universal application breeds unhappiness. Consequently, it behooves us to look for the good in them, to find that we have reason to be

proud of them and glad to be members of them. The home, the school, the church, the State may well claim our loyalty. We should be proud of the individual achievements that have been made possible through what they have done. However, there is no organization, except the church, which touches the lives of the physicians of Alabama so intimately as the Medical Association of the State of Alabama. I take pride in directing our attention to some of the things our Association has done for us and how it has done them.

It is now sixty-two years since Jerome Cochran submitted to the Association the present constitution and fifty-nine years since its adoption. To understand what has been achieved during those years it is well to bear in mind what Cochran and those associated with him purposed to do and the conditions that existed at the time when they began their history-making work. Then there was no adequate examining board and irregular practitioners were abundant. Most of the counties of the State were unorganized and the State organization itself was inadequate and inefficient.

Preventive medicine was in its incipency and not yet unfettered from superstition and lay domination. Quarantine was more badly needed then than now, but the authority for enforcing it was too limited. The causes of typhoid, malaria and yellow fever were unknown and diphtheria was a practically incurable scourge. The hookworm had not yet been discovered and colitis was thought to be exclusively of dietary origin. Scientific nutrition was not recognized as a means of preventing diseases and vitamins had never been heard of. A visiting school physician was not even in the dreams of the most imaginative and the term "oral hygiene" simply was not in the average man's vocabulary.

The result of this was that victims by the score died of diphtheria every year and other preventable diseases exacted a fearful toll from the infants and children of our State; that every hamlet and village had its annual epidemic of typhoid; that malaria made the richest sections of the State uninhabitable except by those who were immune or less susceptible to the disease; that yellow fever often invaded those portions of

*Address delivered at the public meeting of the Association in annual session, Mobile, April 20, 1932.

our State that were in close proximity to the coast and occasionally traversed the full length of the State having been reported at Decatur and Huntsville; that commerce was tied up in our ports and hampered throughout our borders.

The idea paramount in the minds of Cochran and his associates was to make possible efficient quarantine and, what is more important, to bring about such control of diseases as to make quarantine unnecessary. They wanted to free commerce from handicaps inflicted by general quarantine while protecting more effectively the lives of our citizens. They realized that to do this it would be necessary to place the enforcement of our health laws in the hands of men specially versed in health matters and to place our health department itself on a scientific basis. They wanted to protect those who qualified themselves for the practice of medicine and surgery and at the same time to defend the public against men who would barter the lives of their fellow-citizens for the profit that they would be able to secure from incompetency combined with pure bluff and rank dishonesty. They realized that to do this it would be necessary to adopt a uniform standard of admission to practice and to place the enforcement of that standard in the hands of competent and interested men. If the practice of the art and science of medicine and surgery was to be placed in the hands of well trained men, they wanted, further, to provide means whereby those men could continue their training through scientific study and association with one another in the friendly and cordial interchange of ideas that would be secured through systematized organization. To their minds, it was essential that incentives to progress and enthusiasm should be provided.

It should be borne in mind that these founders of our Association as it stands today had no state or country to which they could turn for guidance or example, for all the countries of the world were in no better condition than that faced by Alabama. Their work was that of the pioneer. Columbus-like they had to sail a practically uncharted sea and discover and open up to the world an almost unknown realm.

The work of this Association began before Pasteur of France had done his great

work in bacteriology, including the Pasteur treatment for rabies. Lister of England had not then expounded the principles of asepsis and antisepsis which made possible modern surgery. Semmelweis in Austria had discovered and revealed the cause of childbed fever but his discovery had not yet been accepted. Wassermann of Germany and Noguchi of Japan had not made possible scientific diagnosis of syphilis and paved the way for effective public health work in the matter of venereal disease control. Our own Gorgas and Reed had not redeemed the Tropics by showing civilization how to rid itself of the dreaded malarial and yellow fevers. Wright, another American, had not prepared the typhoid vaccine, which together with sanitary engineering, a science at that time almost unknown, has made typhoid a rare disease as compared with the ravages it made upon life and health in the days our Association began. The American Medical Association was then a lusty youth, but it borrowed at a later date freely from the Alabama plan.

Cochran, having a definite plan, was able to evolve a system that has stood trial for more than sixty years and has proven itself to rest upon principles that, in the main, are sound and right. The Medical Association of the State of Alabama has been an example to a wondering world. Here have come students of organization and public health from various states of the Union, from among our Latin neighbors in Central and South America, from the yellow people of the Orient and from our own kinsmen across the Atlantic. And what has been the distinguishing characteristic that has been ours? The fact that the General Assembly of the State had the wisdom and the courage to vest matters of medical practice and public health in the only group of her citizens prepared to cope with the complicated problems involved—the doctors. This step lent another unique feature to the organization. The medical statesmen directing the new branch of the State organization enlisted the co-operation of every ambitious, progressive physician in the State by forming county units with the same powers in the counties that were exercised by the State Association in the State at large. The enlistment of the rank and file of the profession was further assured by vesting the

voting power of our Association in the hands of representatives from the county units, making a really representative body of the State organization. Again, the physicians throughout the State were made to feel a keen interest in the parent body by the annual sessions at which matters of professional and scientific interest were to be discussed and the opportunity provided for individual growth and professional advancement.

It is not our purpose, for the allotment of time does not permit it, to enter into a detailed study of the working of our Association. But every physician should familiarize himself with the machinery of this organization for it is that branch of our government which has been specifically and definitely committed to the profession and for which the profession must be responsible. You are represented in the deliberations of this body. It is true that some other man may vote for you this year as your representative, but it is equally true that you may vote for him next year as his representative. In your county society you can always have a voice and, if you are astute, tactful and studious, you can have much to do with shaping the policies of the Alabama profession. May I, without being considered bold or critical, suggest that there are too many physicians in Alabama today who are giving too little thought to medical problems and contributing too little of their talent and ability to the advancement of the profession? Have you observed the men who do not attend the county meetings or who take no interest in the work of the organization? Have you found them to be the most progressive and efficient?

Let us not be among those who sleep or engage in destructive criticism. Let us awake to a realization of what organized medicine has done for us and do our best to contribute our full share to the advancement of the profession. Let us leave to those upon whom our mantle of service shall fall a better organization, a more fruitful field in which to labor, a more glorious achievement that the public may be better cared for in time of sickness and more adequately protected against disease.

If such a resolution can be yours, if such an ideal can be your star, you must main-

tain an open mind and ever be watchful for opportunities of improvement. As great as has been the work of Cochran, as faithful as has been the service of Sanders and Welch and others, they were but human. I am sure that none would be more surprised than they should it be suggested that they would not have amendments made or additions appended to their work. Great men always realize their fallibility and the changes that time brings on. The truly great long to see their work a mere foundation upon which succeeding generations may build—and build more nobly, more gloriously. May the American physician never, Chinese-like, be chained to a past that is gone! May the progressive and independent spirit of the American doctor be unfettered as long as time shall last! And yet may he remain modest, conservative, faithful and true! May the democratic spirit within him adopt the sentiment and paraphrase the words of the patriot:

"My Association! May she always be right, but, right or wrong, my Association!"

THE TREATMENT OF EPIDERMOID CARCINOMA WITH X-RAY*

L. E. SORRELL, M. D.
Birmingham

In the last few decades the mortality from cancer has advanced from seventh place to second place. Epidermoid carcinomas have contributed very liberally to this advance. The increase has been more marked in the northeastern part of the United States than in any other part of our country; however, it has increased in all other parts of the country at an alarming rate. Whether this increase is due to failure of reporting formerly, or not being diagnosed, or not being treated I am unable to say and it is a debatable question.

Since radiologists and dermatologists see more epidermoid carcinomas and the so-called pre-cancerous conditions such as moles, warts, cysts, keratoses, burns, irritations and other predisposing causes of carcinoma, I feel that it is our duty and obligation to impress on our colleagues and laymen the importance of having these con-

*Read before the Association in annual session, Mobile, April 21, 1932.

ditions examined and treated early. We should especially impress on them the dangers of delay.

The histologic structure and clinical varieties of epidermoid carcinoma have many causes and courses. There are three main varieties that are recognizable histologically: (1) basal cell carcinoma, (2) transitional cell carcinoma, and (3) the adult squamous cell carcinoma, or the so-called acanthoma. Each one of these may be subdivided several times, which may be recognized histologically, some by their features clinically and others by their etiologic factors.

In this paper I shall discuss only two types: (1) the basal cell carcinoma and (2) the squamous cell carcinoma. (The transitional cell type occurs almost always in the nasal passages, accessory sinuses, on the tonsils, in the throat and on the dorsum of the tongue.)

The basal cell carcinoma, as a rule, occurs late in life, usually after the age of forty, though it may occur earlier. It has been reported in a patient of fourteen years. The average age is between forty-two and forty-six. It occurs on the scalp, neck, face, especially on the eyes, ears, nose, and at the muco-cutaneous junctions.

It first appears as a flat papule or a smooth warty-like growth and may remain in this state for a long period. It may be mistaken for an ulcerated pimple since it does not yield to ordinary treatment. Some of the lesions may come as broad flat elevations, single or multiple, which may coalesce, especially on the forehead and temple. The large rodent ulcers on the scalp may have areas of fibrous tissue scattered throughout the lesions. In the ulcerated lesions the secretion is at first thin and serous, later becoming purulent and frequently bleeding. The edges are raised, nodular, indurated, pearly and usually have a constantly hyperemic area around them. The hyperemia usually has a shiny or glistening appearance and the induration is usually sharply defined. The tumors may become several centimeters in diameter, sometimes involving most of the scalp, face, or neck. This is especially so where incomplete excision has been attempted. The eyes, ears, or the nose may be destroyed, or the tumor may erode the

bone and enter the sinuses and cranium, or erode the blood vessels and produce fatal hemorrhage. Secondary infection may produce cachexia, suppuration, hemorrhage or even death. This type of tumor rarely invades the lymph nodes.

We have two main types of the squamous cell epidermoid carcinoma which are important to distinguish, as far as prognosis and treatment are concerned. The age incidence in this type of tumor is about the same as in the basal cell type. (a) The first type is an elevated warty growth, freely movable and very superficial. In this type the prognosis is good, except when they become ulcerated or depressed the prognosis is more unfavorable. These tumors occur single or multiple. The multiple tumors may be many and distributed over the face, trunk and limbs, and in the early stages may be marked by erythema, seborrhoea, eczema or pruritis.

(b) The second type is flat, indurated, depressed and infiltrated from an early period. They are less noticeable externally, but they ulcerate and invade the lymph nodes and the deeper tissues early. In the more advanced conditions they ulcerate, making a broad ulcer with nodular infiltrated border and a granulating base. These types of carcinomas grow more rapidly than the basal cell carcinoma and are much more destructive; however, both types may occur in the same lesion especially if the tissue has been altered by tuberculosis or lues. The squamous cell carcinoma spreads to the deep tissues along the vessels and nerves causing pain and hemorrhage. They also metastasize to the lymph nodes draining the cancerous area. Secondary infection with streptococcus is nearly always present in the deep ulcerations causing a more rapid termination.

This type of carcinoma is almost always the result of chronic irritation or traumatism, but the forms of irritation are varied and the relation to the tumor are indirect. Irritation is a most important factor from a practical standpoint and all influences such as hereditary predisposition are secondary.

The tumor arises from the normal epithelium after a period of over-nutrition and overgrowth which causes the subepithelial tissue to become less resistant and altered.

Some of the commoner irritations that cause this carcinoma are paraffin injections, chimney sweeper's occupation, x-ray burns, bites of animals and insects; warts, simple and venereal; scars and burns, lupus, eczema and chronic ulcerations, especially at the muco-cutaneous junctions plus trauma. The indiscriminate use of arsenic is also a cause.

In this paper I am including 147 patients treated with x-ray, 143 being well three years or more after treatment. One lesion, which recurred on the ear, was in a patient who was very non-cooperative. The lesion grew rapidly, probably due to some irritant applied. One patient had a recurrence on the nose, probably the result of insufficient treatment when first seen. One recurred on the forehead, the lesion spreading into the frontal sinuses. One lesion on the forehead and scalp, about ten centimeters in diameter, never healed. It was of the rodent ulcer type, with fibrotic areas in it. The cosmetic results were very good in all the patients except those who had considerable destruction of tissue when first seen, or in those in which it was thought advisable to do considerable fulguration. One patient had some deformity of his upper eyelid from the cicatricial contraction of the outer canthus.

In this series I had nineteen patients with carcinoma on the malar region of the face, six on the forehead, ten on the ear, six on the chin, five on the lower lip, nine on the inner and outer canthi of the eyes, three on the back, thirty-four on the nose, four on the eyelid, nine on the dorsum of hand and wrist, eight behind the ear, fifteen on the temple, three on the head, and fifteen on the side of the neck.

Technique:—When I first began treating carcinomas of the epidermoid type I made one mistake of not giving enough radiation to the lesions at the first treatment. The results are much more gratifying if enough treatment is given at the first sitting, and it is much better economically for all concerned. If the lesion is flat, not infiltrated, or is only slightly nodular, I treat without removing any of the tumor. If the lesion is infiltrated, has raised borders and is elevated, I use fulguration or the radio knife and remove the tissue of the tumor almost to the skin level, then treat the lesion with

x-ray. I cut an opening in a piece of tin or lead (the lead being about a millimeter in thickness) the shape of the lesion, large enough to expose all redness or infiltration, the sheet of lead being large enough to protect all the surrounding tissue. I then give from 2½ to 6 skin erythema doses of x-ray to the lesions. If the lesion is a squamous cell carcinoma or if metastases are suspected the regional lymph nodes are radiated with filtered radiation. The patient is requested to return after six or eight weeks for observation.

CONCLUSIONS

1. Radiologists should wage a continuous campaign against cancers and precancerous lesions.
2. Cancer is on the increase in the United States.
3. Excellent results can be obtained clinically and cosmetically with x-ray in epidermoid carcinomas.

Norwood Clinic.

ETIOLOGY AND TREATMENT OF MIGRAINE*

WITH REPORT OF CASE

GRADY O. SEGREST, M. D.
Mobile

In presenting a paper of this nature, I shall endeavor to correlate my experience with facts known concerning the condition. The vast number of factors listed in the literature as possible causes of periodic headaches of a migraine character tend to make the disease one of unknown etiology or a symptom complex attributable to many and various agents.

Timme states that practically all investigators give heredity as the greatest and most potent factor in the production of migraine; and, curiously enough, the mother transmits the disease in about 75 per cent of these cases. Davis states that migraine can be shown to be hereditary in every instance if heterozygous inheritance is carefully considered. There is a definite history of heredity in the case I am presenting; the patient's father had periodic headaches but of a much milder nature. Timme states

*Read before the Association in annual session, Mobile, April 21, 1932.

further that it need not be assumed, as most writers on the subject do, that the heredity factor must be migraine itself; that in his experience this is but one of a number of symptoms which merge into one another; are metamorphosed in passing from parent to offspring and arise in quite different forms in various members of a family. This group of symptoms combine epilepsy, glycosuria, giantism, carcinoma, asthma, urticaria, the arthritides and Raynard's disease. The existence of a constitutional kinship between migraine and epilepsy is shown in Buchanan's conclusions, namely, that migraine and epilepsy are transmitted from generation to generation as the expression of the same underlying factor in the germ plasma; and his statistics seem to show that an individual with migraine is more likely to produce epileptic offsprings than is an individual with epilepsy.

Waltman of the Mayo Clinic believes migraine is one of the many manifestations of psychoneurosis and so expresses himself in the following way: "Headache is often the presenting complaint and the scapegoat of the psychoneurotic. Unless one make it a point to inquire into the emotional life of the patient the true situation may be overlooked." Since psychoneurotics beget psychoneurotics his contention does not invalidate the claims made by other men of the part heredity plays in the production of migraine.

About two years ago I saw a patient, female, age 25 years, with periodic headaches which occurred about every two weeks, alternately first in one temple and then in the other, always worse in the left than in the right temple. This patient's mother had asthma; one brother had asthma; one sister had hay-fever; another sister had migraine and several other members of her family had urticarial reactions from certain foods. This patient's differential cell count, taken during an attack of headache, always showed an eosinophilia; her cell count taken in the intervals between her headaches did not show any abnormality. The history and eosinophilia in this case indicate clearly to my mind that her migraine was of an allergic nature. Whole gland pituitary substance taken by mouth regularly for four months failed to affect the occurrence or severity of her headache. Mi-

graine as well as asthma is often accompanied by eosinophilia. A certain kind of food has been known to institute an attack in both conditions. Timme believes that there are two classes of foods which invariably precipitate an attack of migraine in predisposed individuals, namely, substances rich in iodine, such as fish, oysters, clams and occasionally even spinach; and carbohydrates in excess. These points at most suggest by analogy that migraine is a sensitization disease. But this does not explain why it is that some people have migraine after the ingestion of certain foods while others who ingest the same foods do not have the same reaction.

These heredity traits seem to predispose the individual to migraine only. Added to this are the things that precipitate the attacks, which things probably operate in the vast majority of people without causing headache except in those made susceptible by heredity. Fatigue states and prolonged worry are two of the many things mentioned as being factors in precipitating an attack of migraine. The patient I am reporting today had had a migraine headache for two days in each week for the last two years. These attacks of headaches have come with a great deal of regularity, always coming in the afternoon of Saturday of each week. His occupation is that of a country merchant and he does more work on Saturday than on all the other five days. This would indicate that fatigue might be an exciting cause in his case.

Exposure to extremes of temperature is another thing frequently mentioned in the literature as operating to produce migraine. I do not see how that can be causative in this section of the country since the temperature range is not great.

A toxic state is one of the old and still very prominently mentioned causes of migraine. In the cases I have seen the extraction of infected teeth, the removal of tonsils, the massaging of the prostate, magnesia sulphate once daily and the elimination of all other foci found and suspected failed to influence the regularity or severity of the attacks.

Many glands of internal secretion have from time to time been held responsible for migraine. Several cases have been reported following degeneration of the testicles

as a result of orchitis secondary to parotiditis. With an atrophy of the testicles the pituitary body enlarges often producing a pituitary headache of a migraine character from causes which earlier in life were not operative in this respect—a hypophyseal-sella maladjustment.

I once was instructed by a physician who was subject to migraine of a rather mild character, who felt unusually well for twenty-four hours before each attack. He soon learned to associate this feeling of well being with his headache. This was evidently the manifestation of a disturbance of one or more glands of internal secretion, probably a disturbance of the superrenals which in turn have been shown to be closely associated with the pituitary gland in at least one other condition—glycosuria.

Pregnancy has often been known to exert a favorable influence on migraine and many women cease to have migraine after the menopause. The corpus luteum prohibits the formation of the follicular hormone. The follicular hormone stimulates the posterior pituitary body to secrete more pituitrin. The Ascheim-Zondeck test for pregnancy has confirmed the contention that the anterior pituitary body secretes a hormone which activates or causes the production of the follicular hormone. Therefore during pregnancy, when the corpus luteum persists, there is less activity of both the anterior and posterior pituitary bodies. This same thing would be true after the menopause when no more follicular hormone is produced. With a decrease of the activity of the pituitary body there would certainly be less or no hypophyseal-sella maladjustment if such had existed and was the cause of the migraine.

Over-activity of the thyroid gland is given as one of the exciting causes of migraine. In five typical cases of migraine in which I have had a metabolic reading done, all have been within the limits of normal. The metabolic reading of the patient I am reporting today is zero. I do not recall having seen a case of hyperthyroidism with symptoms suggesting migraine. Therefore, I do not believe that thyroid conditions, active or otherwise, have been a factor in the production of migraine in the cases I have seen. However, it has been shown beyond reasonable doubt that the feeding of thyroid

extract to susceptible individuals often produce migraine. It has been known for a long time that the stimulation of the thyroid causes a stimulation of the pituitary; and most authorities on the subject believe that the feeding of thyroid extract to susceptible individuals causes migraine by causing an increased activity of the pituitary. This over-activity causes hypertrophy of the pituitary thereby causing pressure on the sella turcica.

CASE REPORT

Mr. U. F. T., white male, aged 35, married, a country merchant, was referred to be by Dr. J. C. Hurst of Opp, Ala.

CHIEF COMPLAINT: Headache. Patient has had headache at irregular intervals all life. About two years ago the attacks assumed regularity, coming on practically every Saturday afternoon and lasting until Sunday night. Between attacks his head is never free of a feeling of pressure. For about ten weeks he has been using from one to three injections of morphine with each attack for relief of pain. The location of the headache is frontal and bi-temple. Each attack leaves the skin over these areas very sensitive to the touch. The headache is often associated with nausea and sometimes vomiting but the gastro-intestinal symptoms have not been a prominent feature in his case. There have been no eye symptoms in his case.

PAST HISTORY: He has been unusually free of disease, having had only a few childhood diseases.

FAMILY HISTORY: Father has had periodic headaches of a mild nature for many years. There is no history of epilepsy, urticaria, asthma, hay-fever or other constitutional diseases.

FINDINGS: Height 5 ft. 6 in., net wt. 180 lbs. He has broad shoulders and hips, short legs, narrow ankles, tapering fingers and thin fine hair, indicating a disturbance of the pituitary gland. His blood pressure varied from 170 systolic and 110 diastolic to 110 systolic and 70 diastolic. This indicates to my mind that he is emotionally unstable, probably the expression of glandular disfunction. On careful examination there were no evident foci of infection. In fact all suspected foci of infection had been previously removed without affecting favorably his disabling headaches. In order to remove the gastro-intestinal tract as a focus of infection he had been given magnesium sulphate daily over long periods of time without affecting his headache. His deep and superficial reflexes were equal and normal. Dr. J. G. Sanders examined his eyes on three occasions without finding any abnormality.

LABORATORY REPORTS: Hemoglobin 80%; RCC. 4,000,000; WCC. 7,500; differential count—polys 70%, small lymphs 30%, no eosinophiles reported. A second differential cell count was made during an attack of headache without finding any eosinophiles. This to my mind goes a long way

in ruling out sensitization disease in his case. The metabolic reading was normal. Blood and spinal Wassermann negative.

X-RAY EXAMINATION: X-ray plates of his head made on two different occasions showed the sella to be small with the anterior and posterior clinoid processes almost together. This anatomic variation from the normal would give very little room for the hypophysis to function without giving pressure symptoms manifested by headache.

TREATMENT: Whole gland pituitary substances given by mouth caused much improvement in this case. At first the slight pressure symptoms present between attacks were entirely relieved followed by lessening of the severity of the periodic headache to such extent that morphine was not required for relief. After two months' continuous treatment the headache was completely relieved for two months. At that time the patient, thinking himself well for good, discontinued treatment with the result that his headaches returned with original intensity.

IMPRESSION: I have reported a case that I believe to be due to hypophyseal-sella maladjustment.

HERNIA

REPORT OF AN ANOMALOUS CASE*

A. C. JACKSON, M. D.
Jasper

V. P., white, male, aged 24, was admitted to the hospital on March 17, 1932, at 3 A. M., complaining of severe pain in the abdomen with nausea and vomiting. About 10 A. M., on March 16th while plowing, a small hernia appeared in his right groin and caused him some discomfort. He assumed the horizontal position and reduced the hernia when his pain became more severe and he began to vomit. He consulted Dr. B. W. McNease of Fayette, who advised him to report to the hospital at once, and when he refused morphine gr. $\frac{1}{4}$ was given. About eleven hours later Dr. McNease was called to his home when he again insisted that he had an acute surgical abdomen and must go to the hospital, and by this time the pain was so excruciating that he consented to go.

The past history was that he had been having recurrent attacks of abdominal pain simulating appendicitis for one year. About one month before admission he discovered that he had a small hernia on the right side which would descend occasionally but which he could reduce very easily. He had tried two trusses but neither was effective.

Physical examination revealed a well developed and nourished adult white, male, with little evidence of shock, slightly drowsy from morphine given about three hours before admission. The pulse rate was seventy-two, good volume, respiration ten, and temperature normal. He had slight distention of the abdomen, with moderate rigidity of the muscles, more marked on the right side. There was no tenderness on pressure except in the

right lower quadrant and there it was rather acute. The right external inguinal ring was wide open, easily admitting the tip of the index finger about three-fourths of an inch directly inward which caused no pain. No tumor mass could be felt about the ring or the canal. He could not force the hernia out by coughing or straining. The urine examination was negative and the white blood count was eleven thousand five hundred, with a differential count of 80% polynuclear cells.

Summing up the case it appeared to be one of ordinary acute appendicitis except for the history of severe abdominal pain immediately after reduction of the hernia and the persistent vomiting. I determined to do an exploratory laparotomy and also repair the hernia through a low abdominal incision. Upon opening the abdomen I found the appendix covered by adhesions, rather large, and indurated from chronic inflammation. Upon seeing the cecum and terminal ileum collapsed I immediately examined the inguinal region from the inside and found that the hernia was direct in type, the internal ring being adjacent to the pubic bone, and that the sac together with its contents, a small knuckle of the ileum, had been forced back through both rings and was hanging on the inside. The mesentery of the intestine was not involved but forcing the sac to the inside had increased the tension at the neck to a death grip and I could not release the bowel until the band was slit with scissors. The sac was about two and one-half inches long and filled with bloody fluid. The knuckle of intestine was cherry red in color but there was no evidence of gangrene and resection was not necessary. The appendix was removed, the hernia repaired from the outside, and the patient made an uneventful recovery.

This is indeed an unusual case. After a careful review of the medical literature, I have been unable to find one recorded exactly parallel to it, but three similar cases which teach the same general lesson of careful investigation of any unusual symptoms, following the reduction of hernia. James Duncan, Fellow of the Royal College of Surgeons, reported a case in 1844 of inguinal hernia which was reduced seven hours after strangulation without great difficulty and the patient apparently relieved for about twelve hours, was seized with violent pain in the lower part of the abdomen, followed by rapid sinking and death fourteen hours later. Postmortem examination revealed intense inflammation of about twenty inches of the small intestine as the cause of death. His comment was: "Results such as occurred in this case and similar ones are every now and then met with, place in a strong light the impropriety and danger of delay in such cases." No great length of time is required

*Reported to the Association in annual session, Mobile, April 19, 1932.

to satisfy the surgeon whether the taxis and its subsidiary aids are or are not to be successful; and after these have been fairly tried, every minute allowed to elapse before the performance of the operation must be regarded as productive of danger."

Thomas Bryant, F. R. C. S., in 1867 reported on two cases of internal strangulation of the bowel by a band, associated with a reducible hernia. The first case occurred in 1860 and the patient was operated on for a partially reduced inguinal hernia, but the internal strangulation of the bowel was not discovered at operation, the patient subsequently died and postmortem revealed the cause of death. The second case occurred in 1867. The patient reduced his own hernia and this was followed by acute pain to the right of the umbilicus and persistent vomiting. Careful examination revealed no hernia, but there was a large opening into the abdomen at the external inguinal ring into which the extremity of the finger could be passed. After watching the case for three days and observing the symptoms grow worse and fecal vomiting appear he came to the following conclusion: "It was difficult to believe that the symptoms were due to any ordinary hernia; one thing only seemed clear, that death was imminent if relief was not given; under these circumstances I deemed it right to suggest the propriety of an exploratory operation. The difficulties of the case were then explained to the patient, who was unusually intelligent and his assent readily secured." He opened the abdomen through the hernia sac and upon exploring inside found a band strangulating the small intestine which was divided and the patient recovered.

In his remarks on the case he stated: "When I first saw the case and had carefully gone into its history and reasoned upon symptoms, I was disposed to think that it was one of two classes; that it was one of the class of cases which Mr. Birkett has so ably described in this Society, and that the strangulated bowel had been returned into the abdomen unrelieved, and was pushed upwards between the peritoneum and abdominal fascia; or that the symptoms were altogether independent of the hernia and were due to the presence of an internal band by which the bowel was strangulated. I have been induced to bring this case be-

fore the notice of the Fellows of this Society from the belief that it is of sufficient rarity to be worthy of their attention, and from the feeling that it is a type of a large class of cases in which surgery has hitherto done but little; but in which I am disposed to believe that there is much to be done."

It has been my practice for a long time to explore the internal rings of all existing hernias while doing intra-abdominal surgery and to repair the hernia when the condition of the patient would permit and this investigation saved the life of the patient in this case. The method of approach from the inside to the constricting neck of the sac was ideal and I doubt that the operation could have been done at all through a regular hernia incision. Another point that has strongly impressed me in this case and the study of the other old case reports is the urgency of operation with careful investigation of every possibility in each case of strangulated or incarcerated hernia instead of a blind reduction and trusting to luck that everything will be alright on the inside. In the study of these case records of our forbears, the English surgeons of three-quarters of a century past, it is indeed refreshing to me to note the wonderful command of the English language they possessed, and the keen observation they displayed in following their cases before a conclusion was reached. I observed also that their signs of intestinal obstruction, described in such expressions as "the patient was vomiting yellow bilious fluid, complained of severe pain about the umbilicus and his countenance denoted extreme anguish; pulse small and rapid; skin bedewed with a cold sweat," are considered classical even to this modern day.

The rarity of this case and the basic principle it teaches us as surgeons, to investigate each case with every means at our command, is, I believe, apology enough for its presentation.

NEXT MEETING OF THE ASSOCIATION

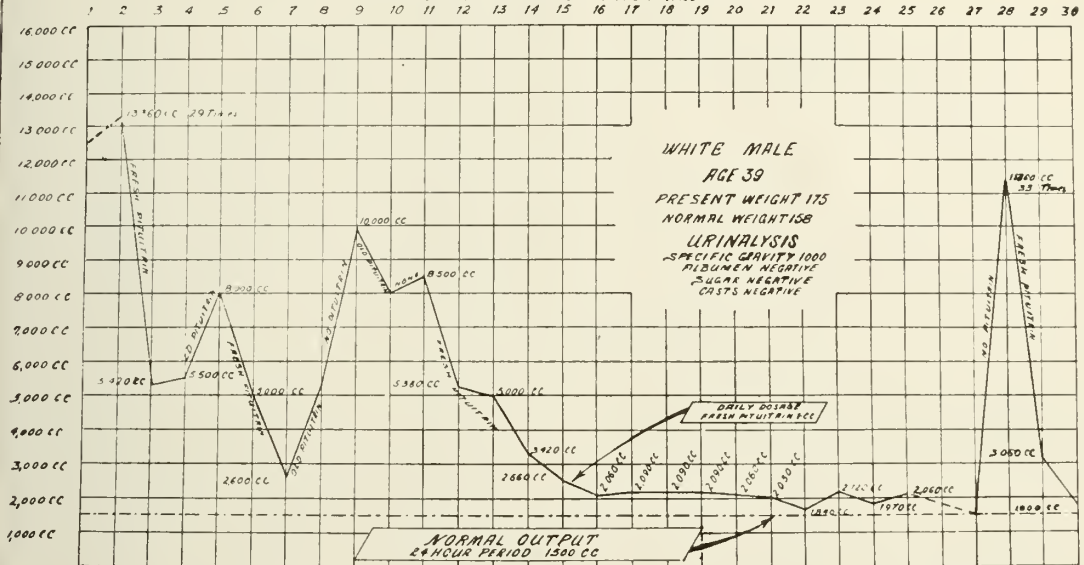
MONTGOMERY

APRIL 18-21, 1933

CASE OF DIABETES INSIPIDUS

CONTROLLED WITH FRESH PITUITRIN

CHART SHOWS REACTION FOR THIRTY DAY PERIOD



DIABETES INSIPIDUS

REPORT OF CASE

C. A. GROTE, M. D.
Huntsville

We wish to report a case of diabetes insipidus which is being controlled by daily injections of 1 cc. of obstetrical pituitrin.

This patient, white, male, aged 39, came with a story that he was passing gallons of urine each day; that he never went longer than thirty or forty minutes without passing a large amount of urine. He was otherwise physically completely negative. His blood Wassermann was negative. He had gained about twenty pounds during the previous year. The only positive finding in his urinalysis was a specific gravity of 1000. We collected specimens for the following twenty-four hours and found he urinated twenty-nine times, a total output of 13,360 cc. of urine. We then gave him 1 cc. of obstetrical pituitrin, hypodermatically, and in the next twenty-four hours it was reduced to 5,420 cc. and about the same the next day. We then gave him a prescription for six ampoules of pituitrin which he obtained from a local drug store.

The ampoules looked like they might be many years old and the first day the output rose to 8,000 cc. and every time we used the old pituitrin the output would rise, while if we used the fresh the output would fall.

We are presenting a thirty day chart showing how nicely the disease was controlled by the patient giving himself 1 cc. of pituitrin each day. It will be seen that on the twenty-seventh day he took none and the output increased immediately to 11,360 cc. X-rays of his skull show no abnormality of the pituitary body.

Nasal Allergy—The therapy of nasal allergy may be divided into the treatment of the allergy and the treatment of the nose and sinuses.

The treatment of the allergy is confined to the use of such drugs as epinephrine, ephedrin and atropine. Prophylaxis is the most important phase of treatment. The source of the allergens must be determined and avoidance treatment instituted. Where this cannot be done, desensitization as used in hay fever may be employed. Shock therapy with non-specific proteins, such as tuberculin, peptones and vaccines, may give temporary relief.

Operative treatment of the nose and sinuses should not be instituted during the acute attack, such as occurs in hay fever and asthma.—*Hankins, Va. Med. Monthly, December 1932.*

THE JOURNAL

OF THE

Medical Association of the State of Alabama

Editor-In-Chief

FRED W. WILKERSONMontgomery

Associate Editors

W. W. HARPERSelma

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J. N. BAKERMontgomery

DOUGLAS L. CANNONMontgomery

Office of Publication:

519 Dexter Avenue.....Montgomery, Ala

Subscription Price.....\$3.00 Per Year

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent.

December 1932

BIRMINGHAM AND THE SOUTHERN MEDICAL ASSOCIATION

The twenty-sixth annual session of the Southern Medical Association, held in Birmingham, will long be remembered in the annals of medical gatherings in the South. It was eminently fit that, after twenty-five years of struggle and growth, this child of Southern Medicine, now grown to full stature and great influence, should again honor the city from which, for years, its business and professional activities have been conducted. While true that death has claimed not a few of those inspired souls whose vision contributed much to its early formation, still many were present and actively participated in every celebration, who had also officiated at its birth. It was an inspiring spectacle to the oncoming generation of physicians to see them "in action". The outstanding occasion for seeing such "action" was the breakfast tendered Dr. Seale Harris in testimony of his labors and devotion to this organization. Another unexampled feature of this meeting was the characteristic manner in which every Birmingham doctor dispensed his own particular "brew" of Southern hospitality. Each visiting physician from the time of arising and far into the "wee small hours" had literally to cut his way through breakfasts, luncheons, "pink teas" and numerous other things which materially hampered "sober" thought. Another "high-spot" in the long

array of planned festivities was the rendition of "Heaven Bound" by the Colored Miles Memorial College. Into this production was packed a splendid array of many musical voices giving a melody of all the familiar "negro spirituals". On the more serious side, this Association has never held a meeting of greater scientific interest and accomplishments and the clinical lectures and scientific papers were of a uniformly high order. The scientific and commercial exhibits, while noticeably contracted in quantity, because of the unusual financial conditions, were likewise most creditable and instructive.

Among the happenings at this session of the Southern Medical Association, which should not pass unnoticed, was the organization and launching of a Southern Branch of the American Public Health Association, which will embrace all full-time personnel engaged in public health work in the territory now covered by the Southern Medical Association. The best organized health forces in the United States are to be found in the South and it is felt that this group, meeting each year concurrently with this organization, should steadily grow in usefulness and strength. May this offshoot prove a worthy branch both to the parent tree and to the South.

C. K. W.

THE LEGISLATURE AND OUR HEALTH DEPARTMENT

Adverse or destructive criticism is easy. Not so easy is criticism of a tolerant and constructive type. The former frequently, though by no means always, springs from an already biased or an ill-informed mind, while the latter carries the implication of a studious and reflecting mind. Without attempting a critical analysis of recent legislative happenings but preferring to leave this to the future historian, a word might properly be said regarding the final outcome of affairs in so far as concerns the Health Department. A cut of forty-two per cent was its fate and the immediate problem confronting us is to readjust and revamp our existing organization in keeping with so drastic a reduction. This is neither an agreeable task to the one responsible, nor heartening news to those who, through no fault or shortcomings of their own, must

be sacrificed. During the extraordinary session of the Legislature just closed, its members finally came to a keen appreciation of the fact that they had an acutely ill and anemic patient on their hands. Its most outstanding accomplishment was the adoption of the Budget Bill whereby it will be impossible in the future for the State to plunge in debt in excess of its actual income. When allotments now made exceed the income, the available funds will be prorated amongst the several departments. This one provision should obviate the dire consequences of past years.

The Legislature of 1927, in keeping with the spirit and tenor of that time, and aspiring to place Alabama in the forefront in many fields of activities, appropriated monies with a lavish hand. Shortly thereafter came the present universal financial debacle, into whose clutches Alabama's roseate plans for the future became inevitably entangled. Our people, bowed down with the load of individual losses, seemed loath to think in terms of increased taxation. At every turn, when the Legislature attempted to approach their problem from this angle, vast hordes of interested groups would descend upon the Capitol, protesting against such action. This attitude of mind was exemplified in the popular vote registered against the bond issue and the income tax amendments of November 8th. As a result—with the exception of an additional already overworked gasoline tax—no substantial increased revenues have been provided. The only other approach toward retrenchment was through curtailment of appropriations to the various departmental activities and salary reductions. For several of the departments the reductions made were drastic and will, of necessity, mean diminished output in the service to be rendered. Our citizens will have to accustom themselves to a contracted governmental budget, just as they have been forced to accept a less luxurious individual budget. They cannot hope for as complete a health service, for instance, from a \$400,000 allotment, as was formerly maintained through a \$686,000 appropriation. The desideratum now to be sought is the preservation of as much as possible of the most essential factors in a well-rounded, state-wide program of health and with this objective

clearly in view all effort will be directed. Some of the members of the Appropriating Committee of the recent Legislature entertained the view that the present amount of \$2,500 legally stipulated by the State to each county organized for health work was too large and that any appropriation made should be based on an allotment of but \$1,500 to an organized county. The reduction of the State's subsidy for counties to such a scale would immediately sound the death-knell for at least one-half of the now functioning health units. The fact that all of the fifty-four counties now organized have been able to continue so long in existence has been due to the increased subsidies which the former liberal State appropriation provided. The need for health work during this crisis, in many of the poorer and more rural counties being greater than ever, it was felt that, so long as funds were available, no greater good could be rendered to the people than a continuance of this service. In order to make available from the present appropriation as large an amount as possible to be used as subsidy to county field work, rigid retrenchment has been practiced in all bureaus of central organization. How many of the present fifty-four organized units will ultimately survive, in the face of reduced State subsidy and the steady and continuous shrinkage in local funds, cannot now be predicted. The problem is difficult and complicated, as well as individual, and will necessitate time and patience in its solution.

The best in Alabama's splendid public health structure can and must be preserved through the united efforts of its citizens and of the medical profession which, throughout the years, have constituted its towers of strength.

J. N. B.

A GREETING

It is the privilege of the Secretary, speaking for the officers of the Association, to extend to the membership and to other readers of the Journal, The Season's Greetings.

DEPARTMENT OF PUBLIC HEALTH

BUREAU OF ADMINISTRATION

J. N. Baker, M. D.
State Health Officer in Charge

THE SOUTHERN MEDICAL ASSOCIATION AND ITS SATELLITES

The Southern Medical Association, on November 15 to 18, 1932, held its twenty-sixth annual session in Birmingham, Alabama. This professional organization has, during the past decade, steadily increased in importance until its influence and significance rivals that of the American Medical Association.

Besides the general sessions, twenty sectional meetings were held at which were presented three hundred scientific papers, many of which were illustrated by motion picture films. Outstanding men from Chicago, Boston and other centers of medical progress appeared on these programs, as well as the leading men of the sixteen Southern States and the District of Columbia. The educational value of such an outpouring of modern, scientific medical opinion and experience cannot be measured.

Held concurrently with the Southern Medical Association session was the annual meeting of the Southern Branch of the Society for Experimental Biology and Medicine. The program was so arranged that those interested might listen to some of the discussions in the field of research and experiment and still not miss the strongest viands upon the table of the general session.

The Southern Branch of the American Public Health Association was the baby organization conceived last spring in the meeting of the parent through the mental processes of its President, Dr. Louis I. Dublin. The branch baby had an organization meeting and a three-day scientific program, beginning on Monday, the fourteenth. Dr. Felix Underwood, Mississippi's State Health Officer, was chosen permanent chairman to preside over this initial session of the new branch. After the adoption of its Constitution, this lusty baby took off to a splendid start, and before the adjournment of its trial meeting one, chancing to see it in action, would have said that already it had reached full maturity. Two

hundred members of the American Public Health Association registered present and automatically became branch members without payment of additional dues. Officers for the ensuing year were elected as follows: President, Dr. E. L. Bishop, Nashville, Tenn.; First Vice-President, Dr. J. D. Dowling, Birmingham, Alabama; Second Vice-President, Dr. J. Mason Knox, Baltimore, Md.; Third Vice-President, Miss Margaret L. East, Louisville, Ky. The Constitution and By-Laws adopted at the initial meeting provided for a Governing Council which will arrange all of the details for the next session, scheduled to be held in Richmond, Virginia, in conjunction with the 1933 session of the Southern Medical Association.

A large attendance of Southern doctors and Southern health workers upon the annual sessions, of this public health branch organization, throughout its early years, is greatly to be desired. The consensus is that such a meeting strikes more profoundly at fundamentals and brings the medical profession and the health workers within vital touch and seeing distance of each other more effectively than the great national meetings can ever hope to do.

It is recognized by all concerned that unity of thought and harmony of effort among doctors and health workers constitutes the *sine qua non* of successful service programs in these two fields which are both so necessary to the welfare and happiness of a sick society.

BUREAU OF LABORATORIES

L. C. Havens, M. D., Director

HISTORY OF STATE-WIDE LABORATORY SERVICE IN ALABAMA

In 1922, Dr. S. W. Welch, then State Health Officer, realizing the importance of adequate laboratory service to the State and that this could not be furnished from a single central laboratory, obtained the cooperation of the Rockefeller Foundation in a program of branch laboratory development. He had previously tried the plan of local laboratory service through technicians

attached to county health units. This plan was a miserable failure and demonstrated conclusively that poor laboratory work is worse than none at all. It would be far better, he concluded, to put more money into a few strong, strategically located laboratories which could render accurate, intelligent service of a high standard of excellence than to waste the money in poorly trained technicians working independently without supervision.

By February of 1923, three branch laboratories were in operation, at Decatur, Birmingham and Mobile. The policy adopted for the administration and operation of the branch laboratories was that of self-sufficient diagnostic units furnishing the same diagnostic service to their respective territories that the Central Laboratory maintained. It was realized that, while this increased the cost of operation, it was an essential feature to the fullest success of the program. The laboratories would not be utilized so completely if the service were not adequate, nor would they be so likely to inspire the confidence of the medical profession and the public.

A further important point in the policy was that, although these laboratories were entirely self-contained units, there must be centralized control if there was to be real state-wide service. Special consideration, therefore, was given to the technical methods and these were carefully chosen and worked out so there was uniformity of results in the different laboratories. Technical expert supervision, a *sine qua non* in the successful operation of a far-flung organization, was maintained by the director of the Central Laboratory.

The Rockefeller Foundation endorsed this program and agreed to bear 100% of the cost of the branch laboratories for two years, 1923 and 1924. The results were immediate and the branch laboratory plan proved so successful that in 1924 two more laboratories were put in operation, at Tuscaloosa and Anniston. During 1925-1927, the Rockefeller Foundation contributed on a decreasing scale, the plan being that the laboratory system should, by that time, have shown its worth, and the State should find itself able to bear the full cost.

The support given the public health program by the Legislature of 1927 enabled

the State to take up the full cost of operation. Had it not been for this increase in appropriation the branch laboratory system would have been wrecked at that time. As it was, it was possible to continue the development with the establishment of a laboratory at Selma in 1929 and at Dothan in 1930. It could now be said that there was no part of the State, no matter how remote or isolated, which was not within easy reach of a completely equipped laboratory, prepared to serve their every need.

In 1930 the Madison County laboratory, the only county laboratory still in existence, realized the advantages of the State laboratory system and arrangements were made whereby it could participate in the elevation of standards, uniform supervision, and economies of operation through centralized buying.

That the branch laboratory system fulfilled its functions of bringing scientifically accurate diagnostic facilities to the medical profession and adequate control of milk, water and food supplies to the public in general, is shown by the following tabulation:—

Year	No. of Laboratories	Specimens Exam- ined Per 1000 of Population
1922	1	33
1923	4	45
1924	6	67
1925	6	74
1926	6	75
1927	6	77
1928	6	83
1929	7	104
1930	9	112
1931	9	115

This volume of work, one specimen for every 8 persons in the State,—more than twice that of any other state—indicates the soundness of the branch laboratory policy and the value of state-wide laboratory service.

This account of the development of Alabama's state-wide laboratory program through a system of district laboratories cannot close without mention of the present situation. It may be that some will advocate the lowering of standards and the operation of all or most of the laboratories on a reduced basis. This scheme would constitute a return toward the original

plan of cheap, incompetent technicians, working with limited equipment and without adequate supervision. This plan failed once; there seems no good reason for trying it again.

Many of the most important activities of Alabama's public health program are built around the laboratories. The model milk sanitation program which was originally worked out in Alabama and has spread thence to cities and states containing 30,000,000 people, was made possible by the accessibility to a laboratory of every community in the State. The control of water supplies, the elimination of typhoid carriers from among food handlers and the prevention and control of communicable diseases are all dependent upon adequate laboratory facilities of a high order of scientific accuracy.

At this date, arrangements have been worked out whereby the state-wide laboratory service can be maintained through the retention of all of the laboratories on a reduced working basis. It has been necessary to cut operation costs to the utmost, with resultant reduction in personnel. In order to maintain the same high standards of scientific accuracy, for which the Alabama State Laboratories have a deserved reputation, certain curtailments of the service are required. Instead of a Kahn precipitation test, as well as a Wassermann test, on all specimens of blood for syphilis, only the former test will be done, the expensive complement fixation reaction being discontinued. Precipitation methods have proved their value and the use of the single test will permit its proper performance by the limited personnel without sacrifice of diagnostic accuracy. Urinalyses, blood counts, and other strictly clinical examinations will no longer be made and the collection of specimens by the laboratories must be discontinued.

It is fully realized that this curtailment may result in inconvenience on various occasions, but a dollar's worth of service cannot be given for 58 cents, and it is wiser to give full value in quality and accuracy in those examinations which strictly concern the public health, rather than to make a futile attempt to continue all the work formerly done on a basis of sound standards with the consequent loss of esteem of the

medical profession and the detrimental effect on the public in general.

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

WHY ADVISE REST?

When all existent knowledge of treating pulmonary tuberculosis is boiled down, rest is responsible for practically ninety per cent of whatever healing takes place within the diseased lungs. Special diets, fresh air, climate and pleasant surroundings contribute somewhat to the final result but all these without rest are of little value.

Many practitioners may consider the evaluation of rest at ninety per cent as high, but leading phthisiologists throughout the country and sanatoria records will bear out this contention. Sanatoria located along the coast showing the usual percentage of arrested cases discredit the concepts we formerly had regarding the benefit derived from altitude and climate. Most large sanatoria have dispensed with special diets and hyperalimentation and get excellent results with an ordinary well balanced diet. It might be said at this point that the above statements are not to discredit the adjuncts to rest, but to stress rest as such.

As we all know, healing takes place in pulmonary tuberculosis by the formation of scar tissue in and about the diseased area. There may or may not be a subsequent deposition of calcium salts. Immobilization of the lung enables this process to take place just as splinting a fractured bone permits mending.

Modern methods of collapse therapy can give absolute rest to the diseased lung, but in general practice we must content ourselves with bed rest, which minimizes lung motion. We find that in the former absolute rest must be maintained for two and a half to three years in moderately advanced cases. Surely partial rest should be maintained until all physical signs have disappeared from the chest and the x-ray findings are stationary.

It is not enough for the physician to recognize the importance of rest in treating pulmonary tuberculosis, he must bring the facts home to the individual patient. The best way to do this is to refrain from advis-

ing rest, fresh air, good food and change of surroundings all in the same breath. The patient naturally attaches equal import to various measures outlined and since long continued rest is odious to him he gives rest the liberal interpretation of restricted exercise. The eggs and milk idea has such a hold on his imagination that he often concentrates on overfeeding to the exclusion of the major issue, rest.

In the home, where twenty-four hour supervision is impossible, and with economic factors playing so big a part, many patients will continue to disregard the physician's advice no matter how strongly it is put but many more will co-operate and greatly benefit thereby once the value of rest is explained.

In the not far distant future, surgical treatment of pulmonary tuberculosis will greatly simplify the handling of our tuberculous clientele, but until that time let us all harp on rest, bed rest, rest until the chest signs are absent and the x-ray findings are stationary to several examinations.

BUREAU OF VITAL STATISTICS

W. T. Fales, Director

RESIDENT DEATH RATES FROM TUBERCULOSIS, ALL FORMS, ALABAMA, 1931

Tuberculosis represents the most important public health problem in Alabama at the present day. In order to be able to study the death rates from this cause, for each county, it is absolutely necessary to redistribute the deaths according to "Residence". Residence is used here, as in our article of last month, to mean the usual place of abode of the deceased. Deaths occurring from tuberculosis in the Veterans' Hospital located at Tuskegee are excluded unless the veteran belonged in Alabama. So far as has been possible, deaths of Alabama residents who died from tuberculosis in other states have been included. Such inclusions have been made possible through the cooperation of the other states and the Federal Bureau of the Census, in making transfers of non-residents back to state of residence.

The striking fact presented in the accompanying table is that the death rate from tuberculosis in the large cities of Alabama

is 45 per cent greater than in the rural counties with organized health departments. This difference is due mainly to the extremely high colored rate in the cities and emphasizes the importance of race and urbanization in the mortality from tuberculosis. The probable explanation of the higher death rate from tuberculosis in the counties with organized health units than in those without health units is that the certification of causes of death by the physicians is more accurate and that there are more towns in the former group. It was shown last year in this Journal (Nov. 1931, p. 222) that towns of between 2,500 and 10,000 population showed the highest tuberculosis death rate of any population group.

In case of the death rate for cities, the white death rates range from 19.4 in Dothan to 89.9 in Anniston. For the colored, the minimum rate was 165.1 in Montgomery to 293.3 for Fairfield. The wide range of rates in the case of counties, excluding the cities over 10,000 population, calls for more study. In the case of Bullock, Dallas, Greene, Pickens, and Sumter Counties, showing no deaths from tuberculosis for the white; and in Cleburne, Cullman, Lamar, Marion, and Winston Counties showing no deaths for the colored, it must be remembered that in each of these counties, the white or colored population is exceedingly low.

TUBERCULOSIS RESIDENT DEATHS* AND DEATH RATES BY COLOR, COUNTY AND LARGE CITIES, ALABAMA, 1931

	Number			Rate per 100,000 Population		
	Total	White	Colored	Total	White	Colored
Entire State	2242	824	1418	83.6	47.8	147.9
Organized Counties	1408	606	802	77.7	50.4	131.4
Unorganized Counties	177	52	125	60.5	30.8	101.0
Cities over 10,000 Pop.	657	166	491	112.5	46.3	217.9
Cities Over 10,000 Population:						
Anniston	32	14	18	139.7	89.9	245.6
Selma	20	3	7	109.2	33.6	181.0
Gadsden	29	9	20	115.2	48.6	300.9
Dothan	13	2	13	77.5	19.4	169.8
Birmingham	319	66	253	118.4	39.6	245.7
Bessemer	25	5	20	119.2	54.7	169.1
Fairfield	21	1	20	178.0	20.1	293.3
Florence	15	8	7	126.3	88.1	250.8
Huntsville	14	7	7	117.0	87.4	176.7
Mobile	66	24	42	95.5	54.1	169.2
Montgomery	66	15	51	97.0	40.4	165.1
Decatur	16	8	8	100.1	66.6	201.9
Tuscaloosa	21	4	17	96.7	28.0	228.9

*Counties Exclusive of Cities Over 10,000 Population:

Autauga**	16	1	15	80.8	11.3	136.8
Baldwin	10	5	5	34.2	22.5	71.3
Barbour	18	6	12	55.4	46.9	64.3

TUBERCULOSIS RESIDENT DEATHS* AND DEATH
RATES BY COLOR, COUNTY AND LARGE
CITIES, ALABAMA, 1931—Continued

	Number			Rate per 100,000 Population		
	Total	White	Colored	Total	White	Colored
Bibb**	7	1	6	33.7	7.2	87.3
Blount	14	11	3	49.4	40.4	278.8
Bullock	17		17	85.0		107.9
Butler**	25	7	18	82.6	45.0	122.3
Calhoun	24	16	8	71.3	56.6	148.3
Chambers	29	8	21	73.8	37.4	117.1
Cherokee	21	17	4	103.9	92.4	218.5
Chilton**	11	5	6	44.3	24.0	150.3
Choctaw	24	4	20	117.0	43.1	178.0
Clarke	14	2	12	53.8	16.1	88.1
Clay	8	3	5	45.0	19.9	183.3
Cleburne	6	6		46.6	49.5	
Coffee	17	5	12	51.7	19.3	172.3
Colbert	26	12	14	87.1	56.1	165.1
Conecuh	15	3	12	58.7	20.8	107.8
Coosa**	5	1	4	40.1	10.8	86.2
Covington	11	9	2	26.3	26.0	28.0
Crenshaw	12	4	8	50.6	24.4	109.1
Cullman	28	28		66.6	67.4	
Dale	6	2	4	25.8	11.2	73.9
Dallas	20		20	54.3		63.4
DeKalb	24	21	3	58.8	52.6	350.1
Elmore	39	10	29	111.3	48.7	199.9
Escambia	17	4	13	59.4	20.1	148.4
Etowah	38	29	9	94.5	79.3	248.9
Fayette**	6	5	1	32.5	31.6	37.9
Franklin	10	9	1	38.8	37.0	69.2
Geneva	13	10	3	43.0	38.0	77.0
Greene**	18		18	90.3		109.5
Hale**	22	2	20	83.0	28.9	102.1
Henry**	5	1	4	21.8	8.3	36.8
Houston	12	8	4	39.7	35.0	54.5
Jackson	30	27	3	81.1	78.7	111.1
Jefferson	156	52	104	108.3	56.5	198.6
Lamar	3	-3		16.7	19.8	
Lauderdale	23	11	12	78.1	45.0	239.1
Lawrence	25	16	9	99.0	79.5	126.0
Lee	27	6	21	74.0	34.0	111.6
Limestone	33	21	12	88.5	77.5	117.9
Lowndes	13	2	11	56.8	61.6	56.0
Macon	29	1	28	105.3	20.5	123.6
Madison	70	41	29	128.9	106.5	183.7
Marengo	37	1	36	98.7	10.0	136.5
Marion	15	15		56.7	58.6	
Marshall	19	16	3	46.7	40.6	230.6
Mobile	45	22	23	87.4	66.0	196.1
Monroe	21	7	14	69.5	48.8	88.3
Montgomery	28	2	26	85.4	19.2	116.2
Morgan	30	22	8	95.5	81.9	175.1
Perry	32	7	25	120.7	96.4	129.9
Pickens	28		28	112.4		234.5
Pike	20	5	15	61.9	28.2	102.9
Randolph**	16	11	5	59.6	52.4	85.0
Russell**	20	3	17	73.0	38.3	86.9
Shelby	25	11	14	90.5	53.3	200.2
St. Clair**	18	12	6	73.0	60.6	123.6
Sumter	28		28	103.3		131.0
Talladega	57	15	42	124.6	52.8	242.2
Tallapoosa	14	6	8	44.6	27.8	81.5
Tuscaloosa	36	16	20	82.3	54.9	137.4
Walker	55	39	16	92.0	75.1	231.4
Washington	13	4	9	78.2	41.2	130.2
Wilcox	23	1	22	92.4	19.0	113.9
Winston	8	8		50.8	51.1	

*Deaths redistributed according to usual place of residence unless place of infection is known and includes deaths of Alabama residents dying in other states, excluding residents of other states dying in Alabama, unless residence was of such duration to account for infection.

**Counties without health units.

BUREAU OF CHILD HYGIENE AND
PUBLIC HEALTH NURSING

Jessie L. Marriner, Director

REMEMBERING WHEN*

*"Most of us, straddling more than one epoch,
delight in remembering when."*

The county nurse was sore beset by the problem of popular adherence to fallacious beliefs. An example of this had been noted in the idea that cattle dipping for tick eradication might be accountable for the deaths of children, in a remote hamlet. Inspired by this incident, her very best efforts had gone into the teaching of facts about the transmission of intestinal diseases. The part played by flies had received much emphasis and means for their eradication had been suggested.

"Had she convinced them?" she wondered. "Would they go on believing in the soothsayings of ignorance instead of the truths of science? How could she learn to tap the secret springs which are the source of wisely controlled conduct and induce them to adopt new ways of living?"

She soon realized that the conduct of a large proportion of the population is controlled by its belief in fallacies. These, born of two closely related states of mind, account for most of the popular subservience to omens of good and bad luck. Fear of the unknown and preference for the familiar in surroundings and in ideas and manners account for the human tendency to persist in the observance of occult rites, in an effort to influence or appease angry gods. She soon learned that mental and physical inertia are dominant characteristics of certain human types. How could she stimulate these to rational effort for their own improvement?

She decided to make a list of the fallacies, belief in which seemed to furnish the heaviest drawbacks to healthful living. These are some of the things she set down:

A tendency to explain any new or unaccustomed illness by attributing it to new conditions or newly inaugurated practices.

A tendency to explain the occurrence of common illnesses by attributing them

*Fourth in a series under this title. The first appeared in the September number.

"A good physician is the patient's counsellor and friend, as well as his doctor. He should have a good doctor from the day his first symptom appears, all through the cure and afterward. He should give his physician credit for knowing more about the disease than he himself knows—which he does—and should abide by his doctor's instructions."

to long accepted but fallacious theories of causation.

Examples of these:

That yellow fever is caused by damp air, fomites, or other effluvia and not by mosquitoes.

That malaria is caused by eating unripe watermelons and not by mosquitoes.

That babies' bowel trouble is caused by letting the sun shine on him and not by the white meat and sugar-tit he is given to suck.

That colds, influenza and whooping cough are caused by too much night air or dampness and not by receiving the spray coughed into the face by one having the disease.

That pregnant women should resign themselves to the loss of a tooth for every child instead of asking their dentist to save all their teeth and teach them how to regulate their diet so as to build good teeth for their babies as well as to conserve their own.

That a pregnant woman can "mark" her baby by looking at objects which excite her, or by eating or not being able to get edibles that she craves.

That one should "stuff a cold" instead of avoiding overeating when the system is clogged.

That babies should be trained to taste a little of everything there is on the table instead of being fed by a formula prescribed by the family physician.

That the Lord wills some people to be sickly or to die and that it is sinful to seek to avoid illness or death and to grasp health and a life of usefulness and happiness.

The county nurse pondered upon these things and had the courage to set her feet upon the road to health teaching, if there could be said to be such a road. She found it at times overgrown and impassable, but throughout the past thirteen years, her progress has been actual, even though it has come "steady by jerks".

BUREAU OF INSPECTION

C. A. Abele, Director

THE PHILOSOPHY OF INSPECTION OF FOOD-HANDLING ESTABLISHMENTS

Before county appropriations to county health departments began to be decreased, the personnel of thirty-eight of the fifty-four county health departments organized included one or more sanitation officers. Among the many duties of these men was the inspection of barber shops, food-handling establishments, dairies and milk-plants, etc. Except in departments in which more than one nurse was employed, the sanitation officer has usually been the first member of the personnel dismissed when curtailment of funds necessitated retrenchment in operating costs. Because current reductions in subsidies to county health departments are being almost universally reflected in the release of sanitation officers, an analysis of the situation thus created appears apropos.

The Object of Sanitary Inspections.—Before the relative public health value of inspections of food-handling establishments, dairies, etc., can be estimated or definitely determined, the objective of such inspections must be known and understood.

Sanitation consists in the safeguarding of the human environment by the amelioration or the elimination of conditions potentially or actually dangerous to the public health. Since a number of the preventable communicable diseases are contracted by the ingestion of their causative organisms, it is immediately obvious that compulsory conduct of businesses in which food-stuffs and beverages are made, produced, and sold, so that the possibilities for their infection with the causative organisms of disease are kept at a minimum, is a very important phase of sanitation. This has been recognized by the framers of public health statutes and municipal codes, in that state boards of health and municipal governing bodies are authorized to formulate and enforce regulations and ordinances prescribing practices and equipment conducive to the wholesomeness and safety of food-stuffs, and prohibiting conditions subjecting them to accidental contamination or infection.

The Manner in Which This Object is Attained.—Section 1146 of the Code of 1923,

as amended in 1927, provides that the State Committee of Public Health "shall prescribe rules and regulations for the inspection and operation" of all places where food is prepared or sold (seventeen types of places being specifically named). Such "rules and regulations" have been adopted and promulgated to cover eating places, soda founts, bakeries, ice cream plants, milk condensaries and butter plants, dairies and milk plants, shellfish areas and shuckeries, exhibition grounds concessions, and carbonated beverage bottling plants.

The philosophy of such "rules and regulations" has been alluded to above. In many instances proprietors must be "educated" with respect to the necessity for the observance of the provisions of the regulations. Such "education" is one of the many statutory duties of county health officers, which has customarily been delegated to the sanitation officer. In the cases of ice cream plants, shellfish shuckeries, and beverage bottling plants the regulations were formulated and adopted at the request of these industries, to protect the more progressive operators against the competition of poorly equipped or unscrupulous operators, as well as to further protect the public health. In all situations of this nature "education" has had to be augmented by "legal enforcement".

Personnel Employed for This Activity.—In none of the thirty-eight county health departments provided with sanitation officers did this member of the staff devote his time and efforts solely to the enforcement of the above-named regulations, but variable proportions of his time were so occupied. In sixteen counties municipal meat and dairy inspectors devoted their efforts to the safeguarding of these particular foodstuffs, and in some cases relieved the sanitation officer of all municipal food-establishment inspections. And in sixteen counties such inspections as were made were conducted by the county health officer in person, or by an inspector from the State Department of Health. In the thirteen unorganized counties inspections were made by State Department of Health inspectors.

The function of the State Health Department in the public health program and system in this State has been deemed to be consultative, advisory, and to some extent su-

pervisory. It is rather obvious that regulations adopted by the State Committee of Public Health should apply with equal force wherever applicable in all parts of the State. In order to further such uniformity of application and enforcement a certain degree of supervision appears to be inevitable. The field staff of the Bureau of Inspection at its maximum included five dairy and milk-plant inspectors (the greater part of whose activities consisted of inaugurating milk control programs); three district inspectors of cafes, hotels, barber shops, bottling plants, etc. (one whose time was mainly occupied with shellfish inspections during half of each year); one milk sampler and tester whose field of work was limited to the quality control of milk for cheese plants and condensaries; and a chief inspector whose services had really been commandeered by the Bureau of Administration.

Results Achieved.—It is very difficult to measure satisfactorily the results of a program of sanitary inspection. The degree or percentage of improvement effected is rather dependent upon the nature of the conditions originally existing, and a high percentage of improvement may not indicate excellent current conditions as much as it implies very poor or primitive original conditions. Morbidity and mortality rates are affected by so many factors other than food sanitation that these cannot be used to show the benefits of improved conditions. Since sanitary inspection is a somewhat empirical undertaking, a photographic record of improvement might be the best measure of results achieved, except that it would be quite expensive to make and keep such a record.

Probably the best measure of the results achieved is a mental comparison of conditions in 1919 and 1932, in the hotels, cafes, barber shops, bottling plants, ice cream plants, dairies, etc., of this State. Those in a position to make such a comparison have frequently expressed their commendations; those who do not recall 1919 conditions are not in a position to praise or condemn.

Responsibility for the Continuation of the Inspection Program.—During the past decade the enforcement of "regulations" has been much facilitated by the scoring or grading of establishments or products sub-

ject to regulation, and the posting or publishing of scores or grades. Proprietors of hotels, cafes, ice cream plants, bottling plants, and particularly of dairies, have gone to considerable expense to attain high scores or grades, and to retain them. Unless the scoring or grading program is continued, the advantages of such expenditures will disappear in proportion to the rapidity with which unequipped establishments and producers are permitted to compete on an equal basis. Numbers of communications have already been received from dairymen, claiming that competitors are using Grade A caps on ungraded milk, and requesting that their investments—urged upon them by health authorities as a protective measure for the public health—be safeguarded by continued enforcement of the regulations.

So long as the various regulations of the State Board of Health are in force and effect they should be impartially applied. Such application need not necessarily include rigid enforcement of every item, such as requiring prompt replacement of worn and broken equipment, painting at regular intervals, and other somewhat arbitrary requirements of an equally costly nature. But protection from preventable disease is equally as desirable today as it was prior to 1929, and partly equipped establishments should not be permitted to start selling food-stuffs, nor should the fraudulent use of scores or grades be permitted in the widespread and desperate efforts to sell anything, regardless of cost of production.

The State Committee of Public Health has rescinded none of its rules and regulations. It is doubtful that such an action would be either wise or expedient. Until its regulations are rescinded the Committee is undeniably obligated, to the consuming public and to the industries affected, to provide for their application and enforcement.

The Most Economical Manner of Enforcing These Regulations in the Current Situation.—Three methods of continuing sanitary inspection service to all parts of the State present themselves. These are:

1. Deputized meat and dairy inspectors, or sanitation officers, where retained.

2. County health officers.

3. District inspectors of the State Department of Health.

Deputized Inspectors—During the past twelve or fifteen months one of the results of the activities of the Integrating Units of the Bureau of Administration has been the deputizing of eight municipal meat and dairy inspectors or sanitation officers to conduct all inspections, including hotels and bottling plants, and to issue official scores and grades. Six of these inspectors will probably be retained, at least for a limited period, and can continue this activity.

County Health Officers—Extreme versatility appears to be one of the prime qualifications of county health officers. They are expected to be adept diagnosticians, office administrators, public speakers, publicity directors, and now—inspectors. It is quite true that an individual sufficiently intelligent to acquire a medical degree may be assumed to have an excess of the intelligence necessary for an inspector. But, even though inspection is a rather empirical undertaking, a certain amount of technical knowledge and mechanical training is essential to effective inspection. This is particularly true of bottling plant, dairy, butter plant, and milk plant inspection. Since the objective of inspections is to further good practice, it is imperative that the inspector know and understand the details of good practice, and can correct situations resulting from bad practice. The individual who devotes only a limited portion of his time and thought to any given phase of his work will always be less informed and less adept in this work than one who devotes his full time to it.

The multiplicity of the duties of county health officers, and the insistence of the demands upon his time for the more professional of his duties, seriously militate against effective inspection service on his part. This statement is based upon the experience of recent years in three-piece county health departments. Health officers have inoculation clinics scheduled, or school-child examinations must be made before schools close, or for various other reasons they cannot accompany district inspectors. Some take comparatively slight interest in inspection activities. The assumption that the greater proportion of

them would conduct an effective inspection program without considerable aid from the State Department of Health is unfounded.

District Inspectors of the State Board of Health—Since the curtailment of personnel effective October 31, the inspection activities of the State Department of Health have all been delegated to five district inspectors. The State has been divided into five areas, with an inspector resident in each. The personnel retained is well educated (all but one holding degrees), thoroughly experienced (all have been engaged in this type of work over five years, one since 1915), and all acquainted with the problems and political situations in their respective territories.

Here is a mobile force of trained and competent personnel, within a few hours reach of any point in their districts, prepared to apply to food sanitation problems—at the request of perplexed health officers—the experience and technical knowledge of years of service. Several of these inspectors would be required for the activities in unorganized counties, of which the number at present is indeterminate. With a corps of five every county can be adequately served.

The most economical solution of the inspection problem now facing the State Health Officer is the judicious combination of all of the three methods above discussed. Whenever local inspectors are imbued with sufficient initiative and competence to conduct the program in their counties with a minimum of assistance, they should be deputized to do so. Whenever county health officers have a comparatively small number of establishments to inspect—as is sometimes the case in particularly rural counties—they should be expected to perform this function. But for the inspections of dairies, milk-plants, butter plants, bottling plants, etc., most of which are located in towns of 2,500 and upwards, a staff of district inspectors should be maintained.

Overheated Rooms—Beware of overheated rooms. This is the time when we are apt to put on too much heat because we are not accustomed to the cooler days that come to us at this season. 68° to 70° is the best temperature for healthy living rooms. Too much heat is more dangerous than not enough.—*Bulletin, Ky. State Board of Health, December 1932.*

BUREAU OF ENGINEERING

G. H. Hazlehurst, Director

SEPTIC TANK WITH GROUND ABSORPTION DISPOSAL FIELD VS. CESSPOOL

Contributed by T. H. Milford
Assistant Sanitary Engineer

A septic tank is a water tight structure, usually divided into compartments into which sewage is led for treatment. The tank is essentially a settling basin in which much of the solid matter of the sewage is retained. A large portion of this solid matter in the tank is liquified through the action of bacteria which feed and live upon it. A portion of the solids called "sludge" which is not liquified remains in the bottom of the tank. Another portion floats on the top as scum. The liquid from which a part of the solids have been removed passes out at the end of the tank opposite the entrance. This liquid is known as the effluent and is subsequently absorbed in the top layers of the ground.

Cesspools, or "dry wells", in most cases, are merely holes in the ground into which sewage is emptied. They may or may not be built water tight.

The biologic action is practically the same in septic tanks and cesspools. There is liquefaction and gasification of a part of the organic matter. "Sludge" gradually accumulates at the bottom and scum is lifted to the top by the entrained gases.

Tight cesspools fill up rapidly and the contents must be removed to a place of disposal. If not emptied, in time, they overflow. Leaching cesspools might be satisfactory under favorable conditions if located in porous earth and a sufficient distance from dwellings and water supplies. Otherwise their use either results in pollution of the soil, endangering water supplies, or the surrounding earth becomes clogged and the contents of the pool cease to percolate away. In the latter case it must be cleaned out or allowed to overflow thereby causing a nuisance.

The main difference between a septic tank with ground absorption disposal field and a leaching cesspool lies in the method, or type, of ground absorption relied upon. The septic tank depends upon a subsurface tile system underlain with gravel, coarse sand, or screened cinders and located above

ground water elevation so that absorption is possible. The cesspool depends upon its bottom and walls or its surface area exposed to the contents. In many instances its depth favors infiltration and filling by ground water.

The major disadvantages of the cesspool are as follows:

1. It has no definite outlet and is subject to clogging, filling, and overflowing.
2. In order to provide adequate surface area for ground absorption the cesspool must be made unusually large. For instance a cesspool, to provide the equivalent surface area of a disposal field which serves eight people, would have to be approximately 17 feet in diameter and 10 feet deep. Even where the same absorption area is provided its effectiveness is not the same as the disposal field.
3. In reaching a depth of 4 to 6 feet and more the "active soil" in which purifying bacterial action takes place is missed. As a result the surrounding soil, if porous, is polluted thereby endangering any nearby water supply.
4. A cesspool unless tightly covered may yield unpleasant odors and also produce mosquitoes.

All of these disadvantages are largely overcome by the use of the concrete septic tank and disposal field as designed and recommended by the State Department of Public Health, or in properly designed and installed commercial installations. Hundreds of these systems have been placed in Alabama and are satisfactorily serving dwellings which have water supply under pressure but do not have access to a community sewerage system.

Health is wealth and the nation's greatest riches; it is power and the key to the national efficiency. While these academic statements will not challenge an answer and health is admittedly such a positive value, it cannot be subjected to computation and measure in exact terms like material values we possess. It is an intangible asset, sensitive to assault, and can only be safeguarded at the price of eternal vigilance and an adequate spiritual and temporal armament. Indeed the unlimited value of health and the need for its protection, except in a negative way, is seldom appreciated. Sir Walter Scott somewhere in one of his novels remarked that a well man is one who is not conscious that he possesses a stomach,—*Stanley, Texas Jour. of Med., December 1932.*

CURRENT STATISTICS

State Department of Health

*PREVALENCE OF COMMUNICABLE
DISEASES IN ALABAMA

	1932 October	1932 Sept.	Total Cases to Date This Year Last Year	
Typhoid	91	95	728	831
Typhus	48	51	206	56
Malaria	389	445	2004	2219
Smallpox	1	2	456	291
Measles	10	3	270	9204
Scarlet fever	309	191	1106	1359
Whooping cough	48	36	1348	742
Diphtheria	505	285	1491	1538
Influenza	93	19	2722	5802
Mumps	79	27	925	1117
Poliomyelitis	6	7	31	42
Encephalitis	3	2	19	42
Chickenpox	12	8	899	1556
Tetanus	8	5	59	43
Tuberculosis	351	355	3885	4469
Pellagra	75	31	676	1046
Meningitis	3	5	55	209
Pneumonia	75	52	2041	2936
Syphilis (private cases)	168	183	1801	1373
Chancroid (private cases)	3	1	36	64
Gonorrhea (private cases)	150	106	1182	1413
Ophthalmia neonatorum	0	2	16	11
Trachoma	0	0	2	2
Tularemia	0	0	23	5
Undulant fever	0	2	16	12
Dengue	0	0	3	3
Rabies	0	0	0	2

*As reported by physicians and including deaths not reported as cases.

PROVISIONAL MORTALITY STATISTICS
Alabama, September 1932

	Number of Deaths Registered Sept. 1932			Annual Rate per 100,000 Population		
	White	Colored	Total	Sept. 1932	Sept. 1931	Sept. 1930
ALL CAUSES	1026	919	1945	875.1	930.2	954.3
Typhoid fever	8	10	18	8.1	12.2	11.9
Smallpox						
Measles					1.4	0.9
Scarlet fever	5	1	6	2.7	0.9	0.9
Whooping cough	5	4	9	4.0	3.6	4.1
Diphtheria	27	2	29	13.0	13.1	6.4
Influenza	5	6	11	4.9	8.6	6.0
Pneumonia, all forms	26	24	50	22.5	26.3	39.0
Poliomyelitis					0.9	2.3
Tetanus	5	5	10	4.5	3.2	1.4
Tuberculosis, all forms	40	100	140	63.0	83.9	68.3
Tuberculosis, pulmonary	35	89	124	55.8	76.2	61.4
Malaria	12	19	31	13.9	14.5	16.0
Cancer, all forms	73	34	107	48.1	52.6	56.9
Diabetes mellitus	19	5	24	10.8	10.0	5.0
Pellagra	13	11	24	10.8	14.5	26.6
Cerebral hemorrhage, apoplexy	74	52	126	56.7	53.1	44.5
Diseases of heart	142	106	248	111.6	104.8	113.7
Diarrhea and enteritis						
Under 2 years	19	17	36	16.2	24.5	36.2
2 years and over	13	4	17	7.6	6.3	11.0
Nephritis	91	85	176	79.2	79.4	82.1
Puerperal state, total	24	15	39	17.5	18.6	15.6
Puerperal septicemia	4	6	10	4.5	8.2	5.5
Congenital malformations	15	2	17	7.6	2.7	4.6
Congenital debility and other diseases of early infancy	68	41	129	58.0	45.8	52.7
Senility	16	25	41	18.4	15.0	15.6
Suicides	16		16	7.2	5.9	6.9
Homicides	12	34	46	20.7	18.1	22.0
Accidental burns	3		3	1.3	5.4	0.9
Accidental drownings	5	7	12	5.4	1.8	4.6
Accidental traumatism by firearms	2	3	5	2.2	3.6	4.6
Mine accidents	1	1	2	0.9	3.1	2.7
Railroad accidents	10	5	15	6.7	4.1	3.7
Automobile accidents	37	15	52	23.4	23.1	16.5
Other external causes	35	21	56	25.2	21.3	20.6
Other specified causes	154	127	281	126.4	153.7	161.9
Ill-defined and unknown causes	51	138	189	85.0	93.9	88.0

Medical News

(Secretaries of county medical societies and other physicians will confer a favor by sending for this section of the Journal items of news relating to society activities.)

A regular meeting of the Baldwin County Medical Society was held at Fairhope, November 3, 1932. Those present and attending the luncheon, which was furnished by the local physicians, at the Nottelman Cafeteria, were Doctors C. G. Godard, P. B. Skinner, F. L. Abernethy, H. J. Sims and J. Chason, members. The visitors were Mrs. F. L. Abernethy of Foley; Doctors John O. Rush, A. A. Wood and I. M. Gravlee of Mobile.

After luncheon, the regular business meeting was held as usual. This being the time for the election of officers, the Society proceeded to elect Dr. P. B. Skinner, President; Dr. P. M. Hodgson, Vice-President; and Dr. J. Chason, Secretary and Treasurer. Dr. H. J. Sims was re-elected a member of the Board of Censors, his term to expire January 1937.

The Board of Health, meeting concurrently with the County Medical Society, proceeded to the election of a County Health Officer. Dr. John Chason was chosen to succeed himself.

After this regular order of business, Dr. John O. Rush of Mobile read a very interesting paper on "Cystoscopic Treatment of Vomiting of Pregnancy", which was listened to with a great deal of appreciation by the physicians present, and was by them and the visiting doctors discussed fully.

* * *

The fall meeting of the Northeastern Division of the Association was held in Anniston on October 25, under the Vice-Presidency of Dr. W. M. Salter. The welcome address was delivered by Dr. J. D. Durden, President of the Calhoun County Medical Society. Papers were contributed by Dr. Jerre Watson, Anniston; Dr. M. Y. Dabney, Birmingham; Dr. S. Kirkpatrick, President of the Association, Selma; and by Drs. J. E. Paullin and E. F. Fincher, Atlanta, Ga.

* * *

Dr. Ernest C. Faust, professor of parasitology, Department of Tropical Medicine, Tulane University, New Orleans, La., delivered an address under the auspices of the

Sigma Xi Club, University of Alabama, on November 18, 1932. His subject was "Use of the Experimental Method in the Study of Human Parasitic Infections".

* * *

A regular meeting of the Jackson County Medical Society was held in Scottsboro on October 4, at which time Dr. Jas. L. Bibbs of Chattanooga, Tenn., delivered an address on "The Heart in Middle Life".

Dr. Lucian Newman was elected a member of the Society and successor to Dr. M. H. Lynch as County Health Officer. Dr. Lynch resigned to engage in private practice in Scottsboro.

* * *

A RESOLUTION

Resolved, That the Morgan County Medical Society has heard with profound sorrow of the death of Dr. John Kimbrough of Hartselle. To most of us the death of Dr. Kimbrough was most sudden and unexpected.

But, in any case, a man engaged in the faithful discharge of the duties that life brings him, and who is living and doing day by day the best that is in him, needs no warning, no preparation for death. He is always ready.

A man just in the prime of life, happy in his family and social relations, prepared by highly specialized and scientific training to render a service to the people of his community and his State, more valuable by reason of his training and experience, he was snatched from it all by the hand of death and translated to other scenes and activities.

With his joining our Society he became a devoted supporter of every measure that would benefit the profession and the section which he loved. His social qualities endeared him to his confreres. He was never heard to complain or seek sympathy.

His sympathetic kindness and courage were recognized by all. He had a cheerful, sympathetic way about him that put all at ease. He was genial and affable in his relations with all who came in contact with him. He was known to all his friends as the embodiment of good cheer, sunshine and optimism.

His jovial bright smile, and his devoted and charitable professional life have put

out of the mind of many a man vexatious things, such as come so often in our busy lives to harass, or possibly to discipline us. His warm and generous heart prompted him to many unselfish and kindly acts that others than the recipients knew not of, but these flowers of affection will always be cherished and preserved in memory by those who knew him so well.

As we think of his generosity, his charity and his many virtues, let us not forget that the highest possible honor that can come to a man is a useful well-spent life.

Dr. Kimbrough's place in the profession was unique. We miss him. Hartselle has lost a valuable citizen and a sympathetic physician. His family has sustained an irreparable loss. To them we extend our sincere heart-felt sympathy.

Resolved, That the Secretary communicate this resolution to the press, the Journal of the Medical Association of the State of Alabama, and transmit a copy thereof to the family of the deceased.

W. M. Booth, M. D.
A. M. White, M. D.
F. L. Chenault, M. D.
Committee.

* * *

The summer meeting of the Northwestern Division of the Association was held in Cullman, July 14, Dr. E. D. McAdory, Vice-President, presiding. On the scientific program appeared Drs. E. V. Caldwell, Huntsville; W. H. Blake, Jr., Sheffield; Courtney Shropshire and J. S. McLester, Birmingham; and John A. Martin, Montgomery.

* * *

Dr. William Walter Cort, professor of helminthology and head of the department, School of Hygiene and Public Health, Johns Hopkins University, delivered the annual address of the Alpha Alpha Chapter of Alpha Epsilon Delta, University of Alabama, on November 16, 1932. His subject was "The Hookworm Problem in the United States". Following the lecture, honorary membership in Alpha Epsilon Delta was conferred upon Dr. Cort.

* * *

Honoring Dr. L. L. Hill for his fifty years of service in the medical profession, the Montgomery County Medical Society gave a souvenir banquet at the Jefferson Davis

Hotel at 7 P. M., Monday, November 21. Addresses were made by Dr. C. A. Thigpen, Dr. A. H. Montgomery, Dr. J. N. Baker and Dr. John Martin, representing Dr. F. C. Stevenson. As a token of appreciation and esteem, Dr. Baker presented to Dr. Hill in the name of his confreres a beautiful silver cup. Dr. Hill in accepting it spoke most fittingly.

Among Dr. Hill's many admirers present were Dr. John Kendrick, Greenville; Dr. L. E. Broughton, Andalusia; and Drs. Ed. Rucker, M. Y. Dabney and J. S. McLester, Birmingham.

President William Hannah presided.

* * *

At the fall meeting of the Southeastern Division of the Association held at Luverne, October 12, with Vice-President G. W. Williamson presiding, Drs. Ralph Clements of Luverne, F. M. T. Tankersley and John Martin of Montgomery and President S. Kirkpatrick of Selma, presented papers.

The address of welcome was delivered by the Honorable Mayor of Luverne and the response by Dr. W. H. McCaslan of Union Springs.

Truth About Medicines

PROPAGANDA FOR REFORM

Sulpharsphenamine: Its Uses and Limitations.—For some years the Council on Pharmacy and Chemistry has considered the question of the high incidence of untoward reactions from sulpharsphenamine as compared with other arsphenamines. In 1925 a paragraph of warning was included in the description of the drug appearing in the current edition of *New and Nonofficial Remedies*. Recently question was raised as to whether, in view of the admitted danger from the use of sulpharsphenamine, it should no longer be recognized by description in *New and Nonofficial Remedies*. In order to obtain guidance in the matter, the Council sent a questionnaire to sixty-one dermato-syphilographers in the United States. In answer to the first question: "Do you regard sulpharsphenamine as more toxic than the other arsphenamines?" 42 answered "yes," and 9 "no." To the second question: "Are you continuing the use of sulpharsphenamine in your clinic?" 16

answered "yes"; 9 replied that they were using it in a very limited manner; 27 answered "yes." To the third question: "Do you believe that the Council on Pharmacy and Chemistry would be justified in withdrawing this preparation from further recognition in New and Nonofficial Remedies, because of its greater tendency to dangerous reactions?" 28 answered "Yes," 2 gave a questionable answer, and 22 answered "no." In view of the diversity of opinions and the considerable group of men who still feel that sulpharsphenamine has a place in the treatment of syphilis, the Council decided for the present to retain sulpharsphenamine in New and Nonofficial Remedies but to revise the description of the drug to give a more detailed warning concerning the dangers and limitations of its use. (Jour. A. M. A., November 12, 1932, p. 1688.)

Iodized Salt, and Goiter an Iodine Deficiency Disease.—Iodine, an essential chemical element for normal nutrition, may be insufficiently furnished by food and drink and cause simple goiter, an iodine deficiency disease. Although supplemental iodine supplied through salt or other special foods may prevent goiter that would otherwise occur or cure incipient cases, the simple administration of iodine in this manner is not a "cure-all." An "accepted" iodized salt shall contain one part of sodium or potassium iodide for each 5,000 parts of salt (approximately 150 parts of iodine per million parts of salt), or the iodine equivalent of any other suitable iodine compound. Iodized salt containing more than this quantity is considered a medicament not to be advertised to the public for table and cooking uses. (Jour. A. M. A., November 12, 1932, p. 1691.)

Vitamin Claims in Food Advertising.—Indefinite or general vitamin claims are vague, noninformative and misleading and do not permit a distinction between foods as sources of the respective vitamins. Vitamin claims shall stipulate the specific vitamin or vitamins present. It is desirable that warranted vitamin claims be expressed in appropriate terms indicative of the relative potency of the food as a source of the vitamins in the dietary schedule. Foods may be considered relatively as fair, good

and excellent or rich sources of vitamins. (Jour. A. M. A., November 12, 1932, p. 1691.)

Trichophyton Extract (Metz Trichophyton).—The Council on Pharmacy and Chemistry reports that Trichophyton Extract (Metz Trichophyton) is a mixture of the filtrates of various species of trichophyton submitted for consideration of the Council by the H. A. Metz Laboratories, Inc. The commercial product is stated to contain the "Extract of various species of trichophyton mixed in the proportion of approximately 40% *T. gypseum*, 20% *cerebriforme*, 20% *T. microides*, 20% *T. rosaceum*, *violaceum* and *crateriforme* in equal parts." From the report of Sulzberger and Wise, it would seem that trichophyton extract is of some value in diagnosis and in treatment of certain cases, in the hands of certain individuals; but apparently the technic is difficult, and some patients may be seriously harmed by inexperienced practitioners. Two dermatologists, consultants of the Council, were asked as to (1) their opinion as to the value of Metz Trichophyton in diagnostic procedures, (2) whether they had observed any false positives, and (3) whether they could recommend it for therapeutic purposes. The first consultant replied that the value of Trichophyton Extract as a diagnostic means has not been established; that he had not worked with this preparation at all extensively and could not report any personal experiences, and that he could not recommend it for therapeutic purposes. The second consultant replied that he believed that Trichophyton is of distinct value in the study of ringworm infections and that reactions sometimes give a clue as to the cause of eczematous eruptions; that he had obtained many reactions where it was believed that there was no active trichophytosis; that he had had an apparent cure of ringworm of the beard under trichophyton, but that its therapeutic possibilities need further study. Since there appeared to be a disagreement as to the value of Trichophyton Extract (Metz Trichophyton), the Council postponed consideration of the product to await the development of further clinical evidence from American dermatologists and authorized publication of a preliminary report. (Jour. A. M. A., November 19, 1932, p. 1779.)

THE JOURNAL

OF

The Medical Association of The State of Alabama

Published Under the Auspices of the Board of Censors

Vol. 2, No. 7

Montgomery, Alabama

January 1933

SURGICAL TREATMENT OF HARELIP AND CLEFT PALATE*

MARCUS SKINNER, M. D.
Selma

Knowledge of those congenital deformities of the face and mouth due to faulty closure of the fronto-maxillary sinus dates back to antiquity. As early as the second century Galen had called attention to congenital clefts of the lip, describing it as *lago-cheilos*, meaning "lip like a hare".

However, it was not until 1764 that Le Monier, a French dentist, recorded the first operation for harelip. He was followed by Roux of Paris who introduced staphylorraphy, or closure of the soft palate, as a distinct operation. Warren of Boston in 1820 recorded a lip operation, being unaware of the work of Roux, and at a later date proposed an operative closure of the hard palate.

I have an English book on Surgery published in 1854 by Erichson. The author states that Warren had proposed a closure of the hard palate but that he had no knowledge of successful cases. The operation, as practiced by Warren, consisted of a dissection of the mucous structure of the palatal arch, denudation of the margins of the cleft and suture.

It is apparent that to America belongs the credit for the most essential step in the modern cleft palate operation and that the modern operations have been developed as a sequel to the really excellent work done by men in the middle of the last century.

Defects of the fronto-maxillary sinus are not so infrequent as one would suppose. The Army draft records show that in Vermont

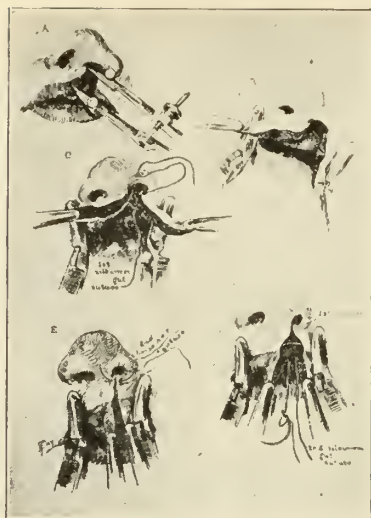
the ratio of clefts of the lip and palate per 1,000 men was 1.55, while in Arkansas the ratio was .16 per 1,000. In the public institutions of Baltimore they were found once in 1,170 births. Burdick estimates that there are 2,000 children thus afflicted born every year in the United States.

The influence of heredity seems to play a predominant part in the development of these defects, for it is not uncommon to trace the history of the deformity back to similarly afflicted ancestors. In my own series of cases there is one family that has three children afflicted and a history of similar deformity in the three preceding generations.

Attempts have been made to connect these abnormalities with diet on the theory that nutrition of the embryo may be interfered with by the diet of the mother. Federspiel mentions an interesting observation made in the Zoological Garden in Berlin in 1913. He states that in a period of one year 32 jaguars were born of one mother by the same sire. All of these animals had cleft palates and all died. At that time the parents were fed with food which is improper for jaguars, namely, cold meat from which the blood had escaped. Three years later the diet was changed and the parent animals were fed warm meat still containing blood. Subsequently 25 jaguars were born and none of them had the cleft.

It is interesting to note that most defects of this kind occur in the poorer classes. No one has explained this but if the theory of an hereditary etiology is correct is it not reasonable to suspect that the inherent defect in the germ plasm causing the morphological-physiological defect is also operative in the psychological makeup of the individuals, making them essentially inferior and incapable of competing economically with

*Read before the Association in annual session, Mobile, April 21, 1932.



The Thompson operation as done by New.

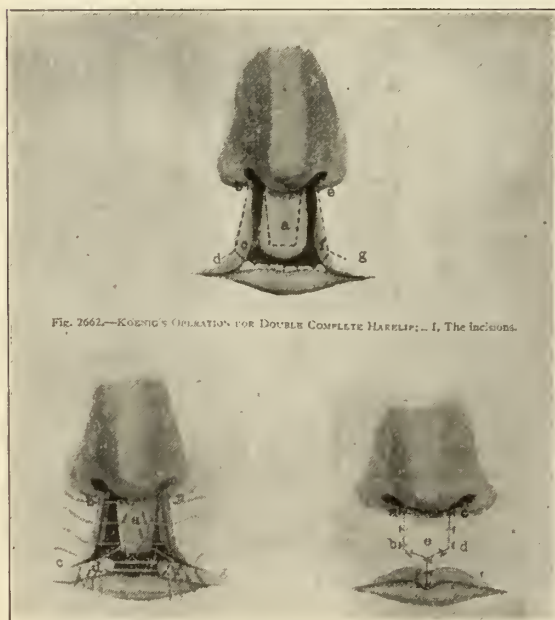
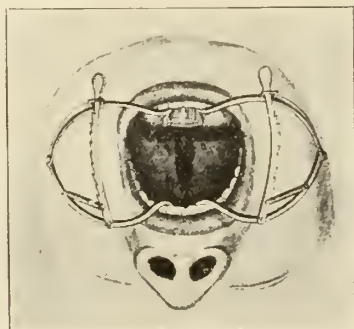


Fig. 7662.—Koenig's Operation for Double Complete Harelip;... I, The incision.

Koenig operation for double lip. (After Bickham.)



View of palate in the Rose position.

individuals inheriting germ plasm of better quality?

The treatment of harelip and cleft palate is a very comprehensive subject and it is obvious that only a brief consideration of the salient facts of the operative treatment can be given in a paper of such limited scope. So I shall confine my remarks to a brief description of the operations with which I am personally experienced.

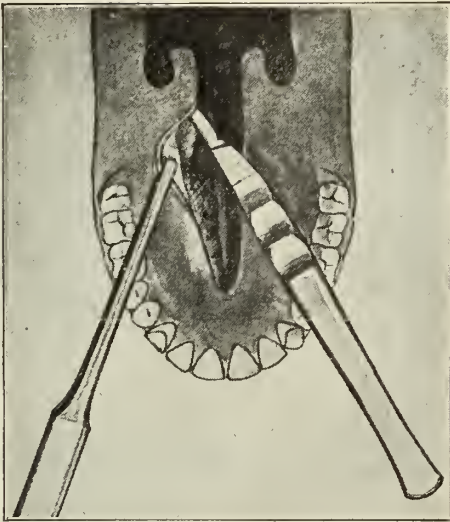
Perhaps it is well to deal with technique simply for I must confess that some of the elaborate explanations of technique in the literature have confused me and if I had not seen these really simple operations demonstrated by good men before reading the literature, I should have been so befuddled and discouraged that I would not have attempted them.

Though an adequate appreciation of the details of technique is necessary, it is most important to realize that exercise of sound surgical judgment in the placing and tying of sutures and meticulous attention to the approximation of raw surfaces is necessary to success.

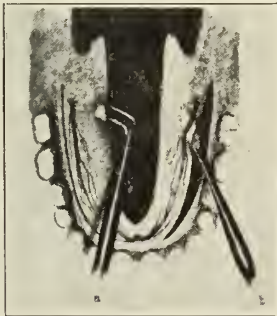
The operation for harelip that I have used is one learned many years ago while on the surgical service of Dr. W. E. Ladd of Boston. The operation is sometimes associated with his name and it is the operation that has been beautifully illustrated by Gordon New of the Mayo Clinic. It is really the operation of J. E. Thompson and has the great merit of simplicity, minimizing the chance of occurrence of a notch defect at the site of the suture line—the most common defect after these operations.

Physicians are often at a loss to know when to advise operations for harelip and cleft palate. This is not surprising, as men who have had much experience with these cases have differed as to the elective time of operation.

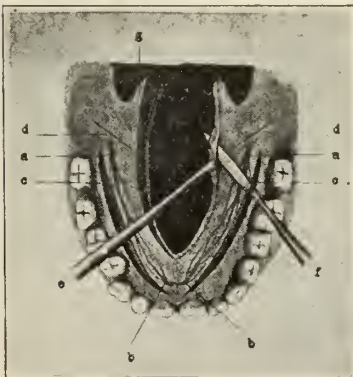
The treatment of complete harelip, or harelip associated with cleft of the alveolus and palate, should start the day the baby is born, although the operation to close the lip should not be undertaken before one month or six weeks after birth. If, from birth, the lip is kept approximated by adhesive strapping until the time of operation, one will be amazed at the narrowing that will be effected in the cleft.



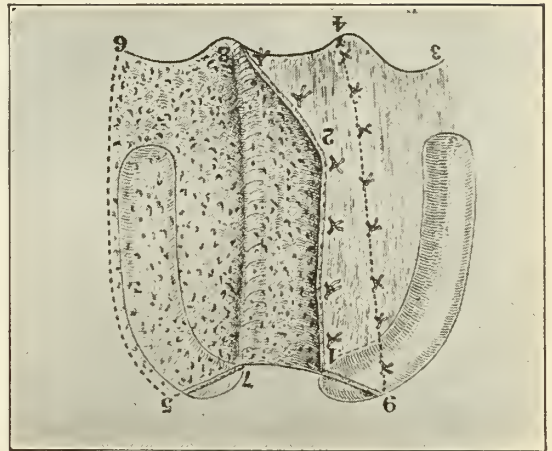
Freeing of the soft palate. Federspiel.



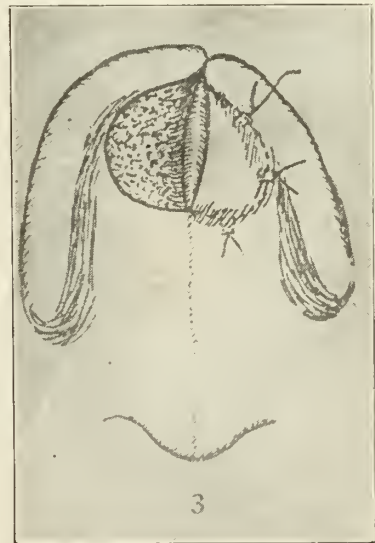
Lifting the mucoperiosteal flap. Note the incision is to the outer side of the palatine artery.



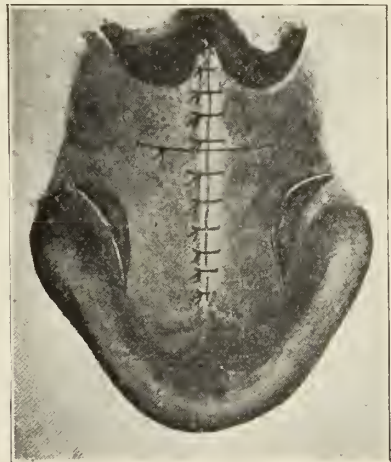
Illustrating denudation and relaxation incisions applicable to the very wide cleft. (Bickham.)



The typical Lane operation. Seldom used. (After Binnie.)



Modified Lane technique. Very useful following a partially successful previous operation. (After Davis.)



Completed operation with eversion of the suture line.



Treatment of the prominent os incisivum. (Esmarch & Kowalzig.)



Postoperative result—single harelip.



Postoperative result
single harelip.



Postoperative result
single harelip.



Postoperative result single harelip.



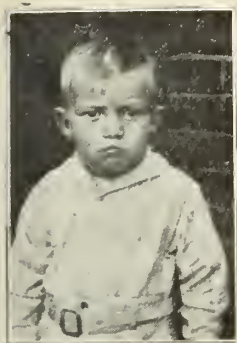
Result of operation for single harelip

The operation to be described will refer to complete harelip with cleft of the alveolus and palate.

There is much controversy over the treatment of the alveolus, some men maintaining that nothing should be done to the alveolus, insisting that closure of the lip will effect closure of the alveolus and that wiring of the alveolus, or osteotomy, may cause serious injury to the tooth buds. It is true that if the lip is operated on at the proper time the alveolus will close spontaneously in most cases but it is also a fact that in children several years of age the alveolar cleft is not likely to close; and in these cases and in the infants with wide defects one can freshen the margins of the alveolus and approximate them with wire, even doing an osteotomy of the alveolus when necessary to secure approximation.

Having disposed of the cleft in the alveolus, the lip is put under tension by the use of Allis forceps and the attachment of the lip to the alveolus freely divided in order to mobilize the lip. Rubber covered, hemostatic clamps are then placed on both sides of the lip at least three quarters of an inch from the cleft. These clamps are not really necessary and, if used, it is well to remove them after making the incision for the coronary artery often spurts and requires ligation. If the clamps are kept on until all of the sutures are placed, it is possible that one would close the lip leaving a troublesome artery open that could endanger the suture line. With slight traction on the Allis forceps the lip is put under tension and the proposed incisions estimated by calipers, although this is not necessary.

Denudation of the margins of the cleft is then done using a sharp-pointed knife to perforate the lip about one-eighth of an inch from the margin of the cleft. The tendency of the average cautious operator doing his first case is to keep too close to the cleft and the result is a lip that is too thin. Moreover, if the paring is very close to the cleft, there is a noticeably poorer blood supply. The straight incisions extend from the inner sides of the nostril to the vermillion border. The wound is then sutured with interrupted sutures of fine, waxed silk, the sutures embracing all the layers of the lip except the derma. The suture to close the nostril is the first suture placed



Postoperative result
single harelip.



Postoperative result
single harelip.



Result of operation for single harelip



Result of operation for single harelip



Result of operation for double harelip



Result of operation for single harelip



Result of operation for single harelip



Result of operation for single harelip



Result of operation for single harelip



Postoperative result
double harelip.



Postoperative result
double harelip.



Double harelip.



Double harelip in an adult.



Illustrating double harelip with resection of the *os incisivum*.

and it is of paramount importance, so much care must be exercised in its placement. The next stitch in importance is the one approximating the lip at the vermillion border. All of the sutures except those coapting the vermillion are placed before any are tied, as this facilitates suturing. These silk sutures are tied on the oral side of the wound. After they are tied the vermillion is so trimmed that when the margins are approximated there will be a slight but definite fullness at the line of suture. This treatment of the vermillion part of the lip is most important and one soon learns how much to leave. Subsequent contracture of the lip will erase the pout and if it is not left, contracture will cause a definite notch deformity. The skin and lip margin is closed with interrupted horsehair, care being taken to avoid infolding of the skin.

There are many operations for double harelip but the one I use is an adaptation of the one used for single lip and is known as Koenig's operation. Double harelip is frequently complicated by a protruding *os incisivum* or intermaxillary bone. At times the protrusion of this bone is so prominent as to form a snout. It is essential in children that this bone should not be resected. In adults it is well to resect it and depend on prosthesis to close the bony defect left in the alveolus by its removal. In infants, if there is much protrusion of the intermaxillary bone, it should be forcibly reduced and secured by wire to the alveolus. Often-times it is necessary to incise the mucosa over the vomer posterior to the intermaxillary bone and do an osteotomy. It is unnecessary to close such a wound with sutures.

I am convinced that in bad cases in young adults there is a field for a two- and possibly a three-stage operation. In one of the cases to be shown, a stage operation was used advantageously and it is probable that without it we would have met with failure.

OPERATIONS FOR CLEFT PALATE

The best time to operate for cleft palate is when the child is at least eighteen months and not over three years of age. The forcible obliteration of the cleft during the first few weeks of life by the use of wire and lead plates has been discarded by most operators. The Brophy operation is typical

of this type and is often followed by injury to the tooth buds and subsequent malocclusion. Indeed there are cases on record where, after such procedure, the palate, though successfully closed, was dotted with teeth that erupted through the hard palate.

The operations with which I have had success are the Langenbeck and Lane procedures. The Langenbeck seems by far the better technique, although the modified Lane operation can be used to great advantage to close a defect of the hard palate after a partially successful Langenbeck procedure.

The essentials of a modified Langenbeck operation as done by the writer are as follows:

1. Ether anesthesia maintained by a catheter in the nostril.
2. The head in the Rose position, which is the Trendelenburg position with hyperextension of the neck.
3. Adequate relaxation incisions through the mucoperiosteum on the outer side of the course of the great palatine artery, the length of these incisions depending upon the width of the cleft. The difficult closures require longer relaxation incisions than the easy ones.
4. Subperiosteal freeing of the soft tissue flaps overlying the hard palate. This is accomplished by separation beginning at the relaxation incision and extending toward the cleft.
5. Separation of the soft and hard palate by incision and, in some cases where the soft palate is very thin, longitudinal splitting of both halves of the soft palate for the purpose of creating the widest possible raw surface.
6. Denudation of the margins of the cleft and closure by means of interrupted sutures of fine silk. The carefully placed sutures, not too many in number, are started on the uvula and are not tied until all are placed. In this way one has excellent means of traction which facilitates eversion of the suture line. Ordinary sutures are used with an occasional "on end mat-

tress suture" for an area that is hard to evert.

7. In the event of persistent oozing the area between the bone and the flaps may be packed with gauze and left for twenty-four hours.

A piece of tape passed through the relaxation incisions and tied within the mouth, as recommended by Dr. Charles Mayo, has been used but most of these devices designed to take the strain off the suture line, this one included, are of doubtful value.



Result after lip and palate operation



Result after closure of lip and palate.

Cancer of the Colon—Cancer of the colon is the second most common internal cancer and causes one-fourth of all deaths from this disease. In the intestinal tract, areas irritated by acid secretion, high bacterial content, ulceration, papillomata, diverticulitis, and prolonged fecal content are most prone to develop malignancy. About 70 per cent of all carcinomas of the bowel involve the lower colon and of these 86 per cent are easily reached by the finger or proctoscope, while only 14 per cent require roentgen examination in order to confirm the diagnosis.—*Babcock, Texas State Jour. Med., Dec. '32.*

THE EARLY HEMORRHAGES OF PREGNANCY*

T. M. BOULWARE, M. D.
Birmingham

In marked contrast to placenta praevia and the other hemorrhages of later pregnancy, the hemorrhages of the first two trimesters occur much more frequently and are relatively much less formidable. The early hemorrhages of pregnancy are usually due to ectopic gestation, hydatid mole, abortion, or miscarriage.

Any discussion of extra-uterine pregnancy is in itself a lengthy subject. Moreover, the vaginal bleeding in this condition is usually in the form of a spotting, an intermittent bloody discharge, or an anomalous menstrual period. Seldom does the vaginal escape of blood reach such proportions as to justify the use of the term hemorrhage.

Hydatid moles are obstetrical curiosities. Their incidence, while relatively rare, is such that a brief mention is warranted in our discussion of early hemorrhages. The pathological picture is typical and the grape-like bunches of dropsical degeneration of chorionic villi once seen in the gross are never mistaken. Microscopically these villi show enormous edema and a relative avascularity. Concerning the etiology of this unusual growth, much light has been shed by the recent extensive works on the female sex hormones. You are all probably well aware of the fact that during pregnancy there is a large production of the anterior pituitary hormone, which is concerned with lutein regulation in the ovary. The hormone of the corpus luteum of pregnancy, progesterin, especially during the early months, promotes trophic changes in the uterus which are essential for the continuance of the pregnancy. It has also been suggested for several years that the placenta itself elaborates a hormone which stimulates the anterior pituitary lobe to continued activity during the pregnancy. With the excessive overgrowth of chorionic cells which characterizes hydatid mole we would expect an overproduction of anterior pituitary luteinization hormone from the increased amount of placental hormone. Such is the case. In one of my patients I was

able to secure a positive Aschheim-Zondek test after a one to seven dilution of urine. This fact explains the rather frequent occurrence of lutein cysts in cases of hydatid mole. Just what the immediate cause of the abnormal growth is and whether the almost invariable fetal death precedes or follows development of the mole are questions as yet unanswerable.

The diagnosis of hydatid mole is usually warranted during the early months in a pregnant woman who is having intermittent uterine hemorrhages, whose uterus is enlarging much too rapidly, and in whom there is no sign of a fetus as demonstrable by palpation, auscultation, or possibly x-ray. Occasionally there occurs an expulsion of a portion of the growth which clinches the diagnosis. An extremely careful evacuation of the uterus is the treatment usually adopted. Great care must be taken to avoid perforation of a uterine wall already probably somewhat weakened by the chorionic tumor and equal care must be taken to remove the tumor in its entirety. Because of the occasional appearance of malignant chorio-epithelioma following mole, some attendants prefer immediate hysterectomy. If the conservative plan is adopted, diligent postoperative observation and examinations are essential. The Aschheim-Zondek test is a material aid in this period of observation. Personally I have observed four cases of hydatid mole in the past three years. One case preferred immediate hysterectomy and three were evacuated. Of these three, one developed a definite chorio-epithelioma four months after operation and this was ascertainable by means of the pregnancy test before clinical symptoms arose.

Abortion and miscarriage remain as the most common causes of early hemorrhage. To the public the term abortion is usually synonymous with criminal interference while miscarriage is generally used with reference to an early spontaneous termination. Strictly speaking, abortion should apply to any termination prior to the sixteenth week, miscarriage should designate terminations between the sixteenth and twenty-eighth week, and premature labor include those cases between twenty-eight weeks and full term. Such is the terminology I have employed.

*Read before the Association in annual session, Mobile, April 21, 1932.

The three varieties of abortion and miscarriage which may cause hemorrhage are the threatened, the inevitable, and the incomplete types. Threatened abortion and miscarriage may occasionally cause alarming hemorrhage but usually do not. If the bleeding becomes alarming the case automatically becomes an inevitable instead of threatened termination and for all practical purposes the treatment for the inevitable cases is essentially the same as for the incomplete types.

This brings us to a consideration of incomplete abortion and miscarriage and of these two the former is by far the most frequent. Incomplete abortion, as the name implies, exists when a variable portion of the early gestational product is retained in the uterus. The etiological factors are those concerning abortion in general.

Among the more important may be mentioned criminal interference, syphilis, uterine abnormalities, and trauma. Some authorities say that 25% of all abortions are criminal in origin. Certainly criminal interference is very prevalent today in all classes of people and its dangers and frequent disasters are well known by the entire medical profession. Taussig, in his recent report to the White House Conference on Maternal Care, estimates that the annual loss of maternal life in this country from abortion is 15,000. This figure is an estimated mortality only and does not take into consideration the enormous morbidity. Although syphilis is a reputed common cause of early terminations, these terminations are more often miscarriages than abortions. This may be attributed to the fact that the pathological lesion in this regard is an avascularity of the developing chorionic villi. As the placenta does not become the important organ of fetal nutrition until about the third month of pregnancy, we should expect most luetic terminations to occur after that time. Chronic endometritis as a definite clinical entity has about been discarded but malpositions of the uterus, such as a fixed retrodisplacement with eventual incarceration in the bony pelvis, may sometimes be the causative factor. Accidental abdominal blows, falls, violent exercise, and excessive coitus may all cause early abortions.

The pathology in a clean case is not remarkable. The fetus and a portion of the amnion have usually been expelled while often the entire chorion is still retained. The large anchoring villi penetrate the decidua basalis during the first weeks of gestation and the true placental villi push into the maternal blood lakes during the second month. As the relative capacity for contraction of such an early pregnant uterus is, of course, much less than that of a term uterus, the "peeling off" process of placental separation following abortion is much less efficient than that following term delivery. Placental retention is thus quite common in these early cases. This retention and partial separation exposes some of the maternal blood sinuses and hemorrhage occurs. With a cessation of fetal circulation all of the chorionic cells not immediately adjacent to the maternal blood stream begin the process of necrosis. Foul discharge, fever, leucocytosis, and other signs and symptoms of toxic absorption all may appear before any actual infection in the uterus exists. The interior of such a uterus is, of course, a very favorable culture medium for any bacteria and doubtless many infections have their origin, not from the carriage in of micro-organisms by instrumentation, but by a simple ascending infection from the vaginal vault. This no one can deny.

Aside from the variable temperature, pain and hemorrhage are the prominent symptoms. The abdominal pain is, of course, due to attempts of the contracting uterus to expel its retained contents while the hemorrhage is attributed to the inability of the uterus to contract sufficiently to bring about thrombosis and closure of the exposed maternal sinuses.

The most important feature of this subject is the treatment adopted. The diagnosis is usually easy but the details of treatment may vary widely in the hands of different men. With this idea of treatment and results in mind, we report a series of 437 cases of incomplete abortion.

There are two schools regarding the management of these cases. One group condemns the use of the curette unless necessitated by alarming hemorrhage while the other advocates immediate curettage. We believe a modification of the latter idea

to be most logical and productive of best results. The argument always offered by the ultra-conservatives is that the curette penetrates and breaks down any protective leucocytic barrier erected in the uterus by nature. This contention is quite correct if a sharp curette be used in infected cases but the great majority of cases are not infected ones even though many signs and symptoms may so indicate.

Many instances of annoyance and actual danger are brought about by too strict adherence to the conservative policy. A "hands off" idea is carried out in many non-infected cases. These patients are allowed to return home after a few days of hospital observation and a few doses of ergot, some to be readmitted several days later very anemic, often in shock, and sometimes demanding immediate transfusion. Needless to say, the retained uterine contents are then usually removed.

It has been our policy to remove the retained chorionic tissue, once a definite diagnosis is made. *The sharp curette is not used in our set-up for such cases.* In this connection the statement of a most prominent Southern gynecologist that "the sharp curette is a diagnostic instrument only" emphasizes the importance of limiting our efforts with this type of instrument. Our operative procedure is as follows: After external preparation of the patient and arrangement of the sterile drapes, a careful pelvic examination is made. The exact position of the fundus and the condition of the appendages are determined. The cervix is then grasped with Burch tenaculæ and the external os carefully cleansed with mercurochrome. The uterus is next sounded to again check up on size and position and the cervix then dilated with Hegar dilators up to size 18. The degree of dilatation while ample to admit the index finger is relatively free of danger of a broad ligament tear which is ever present when the Goodell type of divulsor is employed. If the uterus is not too large the retained tissue may be removed with the gauze-covered finger. If this is not feasible, sponge forceps accomplish the same end. The uterine cavity is then lightly gone over with a large round dull placental scoop and a mercurochrome pack, squeezed dry, is inserted to remain for twelve hours. The uterus is then re-

placed in its forward position if the manipulations have displaced it. Such a method in clean cases removes anxiety and hastens convalescence.

There may be a reasonable doubt as to the wisdom of this method in infected cases. A conservative policy will enable the attendant to feel that he has not tampered with a probable criminal case but are the interests of the patient actually best served? Such cases probably do have an endometrial lesion of variable depth and a probable attempt at a limiting leucocytic barrier but does not the retained necrotic infected placental material provide a constant supply of fresh micro-organisms to add "fuel to the fire"? Would not the patient's chance for recovery be enhanced if this necrotic medium were removed with a minimum of intra-uterine trauma? We believe so. In addition to evacuation of the uterus in these septic cases, repeated small blood transfusions and intravenous administrations of 1% mercurochrome are given. The blood transfusion idea of Polak is just as rational in these infected abortions as we all have found it in the treatment of true puerperal sepsis. The mercurochrome therapy is discussed later.

Our series of 437 cases serves to bring out several interesting points. The admission temperatures of 36% were normal and those of 40% were between 99 and 100, thus giving a total of 76% with temperature below 100. Such patients were almost invariably with normal temperatures twenty-four hours after operation. This would not have occurred had any appreciable amount of uterine infection been present. Most of these low grade temperature elevations were without doubt due to toxic absorption from retained degenerating tissues and their products of necrosis. The criteria upon which a diagnosis of probable infection must depend are the history, temperature, and laboratory findings.

Many of our cases had a high admission temperature to fall promptly to normal after removal of the uterine debris. Such cases with temperatures of 103 and 104 could not have been true septic ones when the temperature fall was so evident and permanent. Patients with real infection would have had a much longer and more stormy convalescence. The leucocyte count

is another guide which is not absolutely trustworthy. 51% of our cases showed admission white counts of less than 10,000 and differentials around 80% neutrophilic polymorphonuclear leucocytes. These figures in themselves are not alarming yet some of our patients with positive admission blood cultures showed this picture on admission and continued to do so. On the other hand many of our cases with counts of 14,000 to 18,000 and differentials around 90% had a temperature fall to normal within 24 hours of operation. A series of sedimentation times were also run. Where the white count was high the sedimentation rate was also accelerated and a few cases with normal white counts showed an increased rate of sedimentation. However, all cases except those showing positive blood cultures on admission promptly had a rapid fall to a normal sedimentation rate. These findings would seem to indicate that some patients may show an ominous blood picture from toxic absorption alone. Blood cultures, if positive, are of course quite final.

Early transfusion of an anemic case is imperative, preferably before operation. Anemic patients have a lowered resistance to any infectious process and though no actual infection may exist, convalescence is hastened by transfusion. Only 1.9% of our clean cases needed transfusion, this again emphasizing the advantages of early treatment.

We also believe that intravenous mercurochrome in dosages of 5-15 cc. of a 1% solution is often of value in our septic cases. This solution was given to 28 patients in our series. Moderate reactions occurred in 12 cases, severe reactions in 2. Apparently there was no kidney damage as demonstrable by urinalysis and the occasional diarrhea was only transitory. In many cases the clinical improvement was quite striking, in others it was disappointing. Inasmuch as our efforts in treating a case of true septic abortion are somewhat limited, a trial of this drug seems justified. The merits and demerits of this therapy are not the purpose of this report but we are of the opinion that striking results may sometimes be obtained by its judicious trial.

The average duration of hospital stay in our group of thirteen known cases of sep-

tic criminal abortion was 9.4 days while the average hospital stay in the remaining 424 cases was 4.6 days. One case of septic criminal abortion was not included in this series because the patient entered the hospital obviously in a dying condition and expired in less than an hour before any therapeutic measures could be attempted. There was one fatality in the series of thirteen cases classed as definitely septic criminal abortion. This patient had a positive blood culture of hemolytic streptococcus on admission to the hospital. There were no fatalities in the remaining group of 424. This shows a mortality of 7.6% for our small series of septic criminal abortion, a negative mortality for our non-septic cases, or a total mortality for the entire series, septic and non-septic, of 0.22%.

SUMMARY

1. Incomplete abortion is the most common cause of uterine hemorrhage during the early months of pregnancy.

2. A series of 437 cases of incomplete abortion is reported.

3. Contrary to the rather prevalent conservative policy of "hands off", we believe that every case of frank incomplete abortion should have the uterus evacuated. The term "evacuation" is sharply differentiated from ordinary curettage.

4. A study of admission temperatures, leucocyte counts, and sedimentation rates would seem to indicate that these findings are not absolutely trustworthy guides to the presence or absence of actual infection. "Toxic absorption", as productive of alterations in temperatures and laboratory findings, is discussed.

5. Our results with intravenous mercurochrome lead us to deem it worthy of trial in cases of frank septic abortion.

Norwood Clinic.

Mental Hygiene—Disorders of the personality which include both mental disease and crime are understandable and can be prevented as well as cured if we will just give to the problem the time, the money and the co-operative effort the magnitude of the problem justifies.—*Wilson, Virginia Med. Monthly, Jan. '33.*

MOBILE'S GIFTS TO MEDICINE AND
PUBLIC HEALTH*J. N. BAKER, M. D.
State Health Officer
Montgomery

Quite possibly, many present have heard the anecdote told of the rather long-winded parson who took as his text, "The Biblical Prophets". After expatiating for an hour or more, and just as the congregation felt he was approaching the end of his exhortations, he drew a long deep breath and said: "So much for the major prophets", and immediately proceeded to paint a similar lengthy picture of the "minor prophets", saying: "Now, this disposes of the major and minor prophets; but, my brethren, what place shall we give Jeremiah?"

At this juncture, a rather sad, wizened, little man in the rear, arose and remarked: "Jeremiah can have my place; I am going home"!

Inasmuch as both the "major and minor prophets" have spoken—and spoken so beautifully—there is little or nothing left for "Jeremiah" to say; so he assures you that he will be both brief and to the point.

Organized medicine in this State—and its lusty off-spring, Public Health—owe a lasting debt to the profession of this quaint and historic old City of Mobile. You have made to us gifts so great that on an occasion like this, I cannot refrain from briefly making mention of just a few of them. To begin with, it was your scintillating medical luminaries of some two or more generations ago that furnished the nucleus around which medical education in Alabama was first crystallized.

Foremost amongst these stands Josiah Clark Nott, who, after receiving training at the leading medical centres of this country and in Paris, located in your midst in 1836 and practiced here for many years. In 1859, we find him in New Orleans as professor of anatomy in the University of Louisiana where he remained but one year. Returning to his first love, Mobile, he immediately conceived the plan of establishing a medical college. So great was his enthusiasm and power that he quickly raised

\$50,000 through popular subscription and another \$50,000 from the State Legislature for "The Medical College of Alabama", which first opened its doors in this City in 1859.

Associated with Dr. Nott in this educational venture were two luminaries of no less brilliance—Dr. Wm. H. Anderson, a native Virginian, and Dr. George A. Ketchum, a native Georgian, both of whom had many years before cast their lot with you. These three names—Nott, Anderson and Ketchum—will ever remain indissolubly blended in the medical lore of this City and of Alabama's first medical school.

The forbidding element of time precludes aught else but the bare mention of a host of other luminaries, who, while possibly not so conspicuous, contributed mightily to the culture, refinement and scientific attainments of this City—such as Vivian P. Gaines, Harry T. Inge, T. A. Frazer, W. R. Jackson, and many others now deceased; not to enumerate some who are now living and laboring in your midst, the mention of whose names modesty and propriety forbid. These distinguished gentlemen lived and wrought in your very midst where, even today, their many kindly deeds and scientific attainments are common knowledge and household words for every old resident of Mobile.

But, great as has been this contribution to the profession of the State in the realms of education and of scientific medicine, it is in the field of public health building and organization that Mobile's claim to imperishable fame rests.

Immediately after that terrible struggle between the North and South, Jerome Cochran, a young physician, born in Tennessee, fresh from the battle fields, and penniless, located in your midst. In those days, yellow fever and smallpox, besides other horrible and preventable maladies, were your constant companions and destroyers. Such an atmosphere proved a keen stimulus to his orderly and logical mind, and, before long, we find him playing a masterly part in an effort to curb the ravages of these enemies of mankind. From these local experiences Cochran learned one valuable lesson: A warfare waged against so insidious a foe as disease, to be successful, must have trained leadership and prop-

*Address delivered at the public meeting of the Association, in annual session, Mobile, April 20, 1932.

er organization. The only material then available were the practicing physicians of the State. These, he reasoned, should constitute the logical leaders and to these he turned. He spent several years of ceaseless labor in perfecting a plan which provided that the organized medical profession should constitute the State Board of Health. This plan, in 1873, was approved by the medical profession of the State and in 1875, the General Assembly of this State carefully studied and finally approved it. And thus it came about that the organized medical profession was taken over bodily and made one of the important arms of the State government. This probably constitutes Mobile's most outstanding gift to public health—Cochran, the creator of our present system of public health.

And now, after fifty-nine years of testing and trial, what may be said of it?

There is no question of the important responsibility resting upon the medical profession; and, as the field of public health broadens and expands these responsibilities continue to grow apace. Despite this fact, the profession has never flinched from this responsibility. With the passing of the years, the confidence of the people and of our law-making bodies has become so great that all now proudly join with us in proclaiming Alabama's health system as being, not only unique, but superior, practical and workable.

No other state in the Union accords to organized medicine so large a voice in the regulation and control of health affairs as does Alabama. Interest and co-operation in any given activity depend, in large measure, upon the authority and responsibility vested in the groups concerned. In the field of public health it is interesting to note the rapid development in those states which have granted a real voice to organized medicine in the shaping of health policies, as contrasted with the halting progress made in other states refusing to concede such recognition. Public health of today means little else than the substitution of the masses for the individual in the application of the scientific discoveries of medicine; and to whom, other than to the scientifically trained physician, should the leadership and the control be entrusted?

Into this scheme is incorporated another important factor in the practical application of public health work. This is to be seen in the employment of the political subdivision—the county—as the basic unit for all health activities and the providing of *medical* boards of health for each county. This wise provision was an outgrowth of Cochran's past personal experiences in dealing with *lay* boards of health in the cities of Mobile, New Orleans and other seaport towns during yellow fever epidemics. Naturally enough, the decisions and deliberations of such lay boards were more often tinged by commercial expediency than by expert medical knowledge. His convictions were unshakable in the belief that the health and safety of the people were paramount and should be entirely divorced from all commercial or political taint.

It will be seen, therefore, that Mobile, through the brain, the vision and the perspicacity of its Cochran, has given to the people and the profession of this State a system of public health organization unique in two important particulars:

First, it definitely places responsibility upon an organized and properly trained group, giving to it, at the same time, a voice and authority commensurate with its interests and the responsibility imposed.

Secondly—and this is most important—because of this system which entrusts the shaping of its policies and the selection of all health officials, to organized medicine, Alabama today boasts of the only health system which is now, and for more than half a century has been, automatically removed from the possible baneful effects of a general political atmosphere. Differences of opinion as to policies and as to how our responsibilities to the public might best be discharged have frequently crept into this organization. But every one will concede, I believe, that the public welfare is less likely to be jeopardized under a system so constructed, than through one subjected to state-wide political change. Its safety, its usefulness and its perpetuity rest now upon the organized medical profession, whose duty it is to zealously guard it from disaster both from within and from without.

Cochran, for more than two decades, was privileged to see this creature of his brain

grow, wax strong and reach a promising adolescence. He died in August, 1896.

Mobile's second outstanding gift to the public health of this State was Dr. Wm. H. Sanders—the worthy and noble successor to Dr. Cochran.

His studious face and dignified carriage were familiar to many here present to-night. He was a native Alabamian, living his whole life within her borders and practicing his chosen specialty of ophthalmology in this city up to the time of becoming State Health Officer. For twenty-one years—from 1896 to 1917—he faithfully served this Association and the people of this State, giving to them every ounce of his energy and every iota of those splendid mental talents with which nature had so lavishly endowed him. A profound student of medical organization, and more especially of Alabama's particular plan, and having been adequately tutored through close affiliation with the master mind of Cochran, he was quickly able to show to the profession and the people that Alabama's health ship was entrusted to safe and capable hands. It was during his administration—in 1914—that the first whole-time county health unit was launched in this State which had the second such in the United States. His brain it was that conceived and planned our first state laboratory and Pasteur Institute, the precursor of our present splendid system of branch laboratories now serving all the physicians and all the people throughout the State.

It was his courage, his vision and his ability to portray in clear, lucid fashion the philosophy, breathed into this organization by Cochran, which snatched it from destruction from within, at that critical period of its life when some of its members, in all sincerity, felt that it had become obsolete, outmoded and ill-adapted to modern-day public health methods.

These, and many other acts, of a constructive and enduring nature, he did, before surrendering office in 1917, because of poor health and the infirmity of years. Personally, I consider it one of the rare privileges of my life to have been intimately associated throughout a number of years with so courageous a soul and with such a concise, orderly and logical intellect.

These are some—not all—of the benefactions you and your beautiful City have given to us. I trust that you treasure them as highly as do we.

Dr. Sanders' successor, Dr. Samuel Wallace Welch—who in such magnificent manner proved the perfect workability of the public health machine which Cochran created and Sanders saved—you cannot claim. He belongs to Alabama.

ETIOLOGY OF LICHEN PLANUS*

F. E. STOCKTON
Birmingham

The most commonly promulgated theory of the causation of lichen planus assigns it to a nervous origin. This explanation is easily satisfying to the patient and superficially, at least, there is a world of evidence in favor of it. A considerable number of cases have been recorded as following some shock, one author going so far as to state that one kind of shock, a sudden chilling of the body, was peculiarly liable to cause it. The *post hoc, ergo propter hoc* reasoning is always bad and in view of larger statistics, we can afford to leave shock aside except as it comes into the general theory of nervous origin. That these patients, or a vast majority of them, are nervous when they come to the doctor is notorious but that could also be ignored since the character of the subjective symptoms is of a nature to render them so. What cannot be ignored is that a smaller number but still a decided majority of them give a history of nervousness—mental or emotional strain or worry—for some time, months or longer, before the appearance of the lesions. This is also a *post hoc* argument and only the percentage of patients makes it necessary to take it into consideration. In so far as the patients speak of an increased tendency to worry, regardless of the need for it, one might say that that was but another symptom of the condition that later brought out the lesions.

Again we find that the majority, two-thirds or more, of the patients are of the private patient, white collar type, rather than the dispensary, or laboring class type.

*Read before the Association in annual session, Mobile, April 21, 1932.

Practically all the patients listed by White, for instance, were persons using their brains as the tools for making a living. In England and the United States the majority of the patients are women of a class sufficiently intelligent to worry, with sufficient leisure to worry, and endowed with ambitions or at the time supplied with conditions to give excuse for worry, the class most prolific in the supply of neurasthenics. Most of my own patients have been of that class. It is to be noted immediately, however, that on the European Continent the proportion of the sexes is reversed, there being more men recorded there.

On the other hand, many patients are found who show no sign of any nervous element. I have in mind a woman of twenty-eight, two or three years married, by temperament calm, unexcitable, almost phlegmatic, living a life just interestingly full of interesting occupations without being fatiguing and with no discoverable source of nervous strain or worry. In another instance one of two brothers developed lichen planus after a year or more of great strain trying to save his father's coal mine. But, about the same time, his younger brother developed lichen planus also and he was stolid, rather dull without a nerve apparent in his make-up and making a comfortable living in another line in a nearby community.

Another blow to the nervous origin theory came with observations during the late War. English dermatologists are almost unanimous in noting a decrease of incidence during that time of infinitely increased nervous strain, anxiety and worry of one kind or another. One prominent American dermatologist cites his work with the army, where he found lichen planus practically non-existent, as a death blow to his regard for the nervous theory of its origin. Little also claims that there has been a sensible decline in the incidence in the first two decades of this century despite the fact that by no stretch of the imagination can it be held that the demands on the nervous energy of the mass of the population, especially of the white collar class among whom it seems to be most prevalent, has diminished.

However, while declining to consider the nervous element the main etiologic factor in lichen planus, it is not necessary to rule

it out altogether. Few things have a simple, single cause. The crop of corn needs soil as well as seed.

One writer has tried to explain the decrease in incidence during the War on a dietary basis, suggesting that it may be a meat eater's disease. So far as I know no other proof for or against this has been offered beyond that speculation.

The microbic theory has its proponents, among them Unna, Lassar, Hallopeau, Trimble, and Pollitzer. Some of these cite familial cases, such as the one I just referred to in my own experience, as proof, while other authors use the paucity of such cases as argument on the other side. Graham Little so regards it. He says that a theory to be acceptable must account for the diminution in two decades, the sex distribution, immunity of children, lack of infectivity, chronicity and recurrence, exaggerated subjective symptoms and might well have added, the pathology. As we have said, the lack of infectivity is disputed by some, except as it seems to be proven by the immunity of children, individuals at the age when susceptibility to infection is the greatest. That is hard to explain on the microbic theory. The sex distribution is also hard to account for unless the difference in this regard between the Continent and England be regarded as evening up that matter and eliminating it as a problem. As to the diminution in incidence, if it were microbic in origin it would not stand alone in gradual yielding to better living conditions, greater knowledge of and attention to hygiene. In morphology, chronicity and recurrence, it has likenesses to at least one known microbic disease, syphilis. In its acute and subacute forms it is bilateral and at least roughly symmetrical. In its chronic form it is apt to be localized and may be unilateral. It has a tendency for lesions to appear at points of trauma, as along the line of an excoriation, where a truss presses, or where the edge of a corset rubs. Though this tendency has not been noted in the acute stages of syphilis, so far as I know, in the late stages of syphilis nodular lesions seem frequently to be determined in areas subject to trauma, just as the chronic hypertrophic lesions of lichen planus tend to appear especially on the shins. Lichen may or may not have an

acute, widespread stage, and syphilis does not always have a marked or even a recognizable widespread secondary. Lichen may be apparently or really cured and recur. So syphilis may disappear from the skin even without treatment, and recur on the skin. As to the exaggerated subjective symptoms, these are not always present. One prominent American dermatologist, in commenting on Little's paper, expressed surprise at the importance he gave to this point, since it differed so from his own observations.

The pathology accords well with the microbic theory. Roughly the characteristic pathologic change is found in a band of infiltration of round cells, connective tissue and lymphoid, mostly, in the corium, the papillary and subpapillary layers, with a straight, horizontal lower boundary. This seems to begin with dilatation of the vessels and the infiltration spreads from them. This is generally taken as consistent with explanation of the cause as either a microbe or a circulating toxin.

With the exception, then, of the immunity of children, the microbic theory would seem to be a satisfactory explanation of the etiology of lichen planus.

There remains, however, the toxemic theory. Chapman reports eight cases with dental caries cured by removal of the carious teeth; but, says Little, lichen planus is decreasing in England and dental caries is not found in all cases of lichen planus. If Chapman's cases were cured by the removal of carious teeth, they were cured by the removal of foci of toxin absorption. As there are many other possible foci for toxin absorption aside from the teeth, Little's argument does not so well act against foci. I know of no statistics as to the prevalence of foci of infection, their increase or decrease, but it seems reasonable to believe that as the general health of the masses improves, as shown by the lowering of the death rate, the incidence of foci of infection may be decreasing. Foci are little apt to appear in young children and most apt to appear in the active middle decades of life when lichen planus prospers. It suggests itself that investigation might find that habits of life differing on the Continent and in England responsible for reversed incidence of

such foci in the two sexes. Slow absorption or explosive output of toxin from such sources might well explain the chronic or subacute and the acute outbreaks of lichen planus, and also the chronicity and recurrence. If you lean to the side which believes there is a lack of infectivity, this theory is consonant with that attitude. If you find negligible subjective symptoms, you may remember this theory is used with regard to the causation of erythema multiforme which often gives negligible subjective symptoms. If you find exaggerated subjective symptoms, you may on the other hand remember the torments of urticaria, similarly explained. The pathology is also agreeable to this theory.

The treatment furnishes little clue, after giving at first thought great promise. X-ray is widely used. In the chronic hypertrophic cases, views as to its usefulness differ radically. Some report good results from its use, particularly when combined with the use of various chemical agents, while others find it of no benefit. I have seen little good come from its use in such cases beyond a temporary reduction of the itching. In the acute cases it is highly useful, especially for the relief of the intense discomfort. When it cures, and it does not invariably do so, it is after six or eight weeks. We shall comment on the time factor a little later.

The general reliance in treatment seems to be on internal medication by certain specific drugs, and these the same as are used with such benefit in syphilis—arsenic, mercury and, lately, bismuth. Arsphenamine, intravenously, enesol, an arsenic and mercury combination, or some form of mercury intramuscularly, have all been efficacious, or seemed to be, in a few weeks time, particularly in the acute widespread cases. I say seemed to be because doubt has been cast on their therapeutic value by some observers, as McKee and Fordyce, who noted that the particular type of cases that were most expected to yield to them had a tendency to abate after a few weeks even without such apparent specific treatment. One who believes in the efficacy of these drugs, and personally I would not treat a case without use of one or another, will believe that efficacy an argument in favor of the microbic theory or possibly, to a lesser de-

gree, in favor of the theory of a toxemic origin.

As for myself, until and unless some one finds a causative organism, I shall continue to use the x-ray and mercury and arsenic and institute an intense search for a focus of infection.

The patients who inspired the subject of this paper were sadly fruitless in helping with its preparation. Mrs. L. T. P., with an acute, generalized, recurrent attack, consented to go to a dentist who found two abscessed roots. He named a price for taking them out and doing other work in her mouth that gave her pause, and before she had stopped pausing her husband lost his position and the acuity of her symptoms subsided. Her lesions disappeared slowly under x-ray and mercury while she retained her infected roots, and her husband his nest-egg not unduly diminished against the rest of this rainy day we are passing through. There were also symptoms pointing to a possible gallbladder infection in her case.

Miss L. D., had a localized, subacute case of some months standing before seen. She had a mouthful of bridge work and fillings and crowns and admitted that she supposed she stood in need of a dentist's ministrations, but did nothing about it. Her lesions also yielded to x-ray and mercury—or time.

The third was a clinic patient, because of the depression, of a class one expects to see in his office in ordinary times. On a very busy day she was seen, the diagnosis made (it was a generalized, acute attack) and referred to another department for the first of a series of shots that was to be part of her treatment, with directions to return for further investigation. She didn't return.

Diabetic Children—Diabetic children are living. That is the outstanding feature of the diabetic story of today. Already 100 of our pioneers have passed the ten-year diabetic mark. Next year in the entire country the number will double and then keep on increasing until 1,000 are added each year, because 1,000 children represent the yearly accession to the childrens' diabetic population in the United States. Ten years ago you and your fellow pediatricians had a few feeble diabetic children to treat; ten years hence you will have 15,000 diabetic children for whom you will be making health examinations.—*Joslin, South. M. J., Jan. '33.*

TUBERCULIN TESTING*

PAUL W. AUSTON, M. D.
Opelika

During the last twenty years of the war against the ravages of tuberculosis, the field of tuberculin testing has been thoroughly worked over and a vast amount of valuable knowledge gathered concerning the epidemiology of the disease. Before going into a discussion of tuberculin testing, it is well for one to recall the disappointing history that marked the arrival of the product and the discouraging influence that it had on its later use as a diagnostic aid.

In 1882 the tubercle bacillus was discovered by Robert Koch and its definite etiological bearing on the disease proven beyond doubt. This was an epochal discovery in the history of tuberculosis and in the life of Robert Koch, but this discovery was to take second place to the events that were to follow later. Now that the causative organism had been discovered and proven by Koch's postulates, it was thought by Koch and by the millions of sufferers of the disease that in a very short time a serum or vaccine could be produced to cure the sick and prevent the healthy from contracting the disease. In 1884 Koch produced the first tuberculin which he obtained from broth cultures of killed and filtered tubercle bacilli. Following this startling announcement, that a cure for tuberculosis had been found, great throngs of people all over the world, who were sufferers of the disease, left their death beds, their sanatoria, their places of rest and convalescence and rushed to the little laboratory of Robert Koch, so that they could be among the first to obtain this precious fluid. In America great throngs migrated from Saranac Lake, Denver, and other famous centers of treatment to New York City so that they could obtain treatment as soon as the first boat landed and before their last precious days were spent. Many knew that they could not survive during the time that it would take to have the precious fluid sent from New York to them, so they were there, awaiting the

*Read by title at the annual meeting of the Association, Mobile, April 19, 1932.

*From the Tuberculosis Research Unit of the Rockefeller Foundation and State Department of Health, Opelika.

first boat, hoping and praying that there would be a sufficient amount of the meager supply to bring about a cure of their disease. Dr. Alfred Loomis, himself a sufferer of the disease, went to Europe and brought back the first tuberculin. Needless to say, the dismal failure of tuberculin as a therapeutic agent left many heart-broken and sad victims stranded with only a few remaining days or weeks of life. They had seen their hopes rise to the greatest heights, only to fall to the lowest ebb. It is evident that such a dismal failure would cause tuberculin to pass into oblivion where it remained until its revival in recent years as a diagnostic agent.

PREPARATION OF TUBERCULIN

A number of clinicians who are using the tuberculin test daily are unable to explain to the entire satisfaction of their patients "What is tuberculin?", when confronted with the question.

Tuberculin consists of a heated 5% glycerine broth culture of the tubercle bacillus concentrated to 1/10 the original volume. It contains the products of growth of the bacillus together with the elements of the culture medium. Glycerine broth is inoculated with tubercle bacilli, incubated at 36 to 38° C., and allowed to grow from six to nine weeks, depending on the rate of growth. When the desired period of growth has expired, the culture is killed by heating in steam at 100° C., for one hour. This killed culture is concentrated to approximately one-tenth the original volume, filtered through Berkefeld candles, and then passed through a series of tests. Sterility is determined by plating and guinea pig inoculation, and activity is tested clinically on a series of cases.

In doing tuberculin testing one should use a dependable, standardized product of known potency. At one time the market was flooded with products of unknown or doubtful potency. The tuberculin test, as it is applied to detect tuberculous infection, is harmless.

DIAGNOSIS OF TUBERCULOUS INFECTION

The control of tuberculosis has been advanced decisively by tuberculin testing with the Von Pirquet and, more especially, the Mantoux methods. These contributions

and studies merit a greater place in the fight against tuberculosis than has even been granted them. Our present program in Lee County would be materially handicapped without them, and the work on the epidemiology of tuberculosis would almost cease. Opie, Aranson, and others have shown us that at the present time this is one of the most fruitful phases of all tuberculosis work. There are four methods of applying tuberculin, each of which has been found of value:

1. Mantoux Intracutaneous or Intradermal Test: The Mantoux test, because of its greater accuracy and its measure of hypersensitiveness, is our method of choice. The skin on the flexor surface of the forearm is cleansed with alcohol or acetone. An accurate tuberculin syringe, containing a solution of old tuberculin of such strength that 0.1 cc. contains 0.01 mg. of tuberculin, is held in such a manner that the 26 gauge, one-half inch needle is most parallel to the surface of the skin. Then the needle is gently inserted into the superficial layers (it must not pass beneath the skin) and 0.1 cc. of the solution is injected, producing a wheal. The reaction is read in 48 hours and, if *negative*, a second injection of 1.0 mg. contained in 0.1 cc. of solution is given in the opposite arm and read at the same time interval. If there is no reaction from the 1.0 mg. dose, one may conclude that there is no tuberculous infection.

An excellent method of reading the results of the test is that devised by Opie, Aranson, and McPhedran which is as follows:

One plus (+)—Redness and *edema* in an area not exceeding 10 mm. in diameter.

Two plus (++)—Redness and *edema* greater than 10 mm. but not exceeding 15 mm.

Three plus (+++)—Redness and *edema* exceeding 15 mm. in diameter.

Four plus (++++)—Necrosis of the skin or marked vesiculation, regardless of *edema* or redness.

2. Von Pirquet Epidermal Test: For those who object to hypodermic needle and the introduction of a "serum" into the body, the epidermal test makes a wise

compromise. The flexor surface of the forearm is cleansed with alcohol, ether, or acetone and thoroughly dried. Then the outer layers of the epidermis may be removed by needle scratches and a drop of tuberculin applied, or a special type of scarifier (as is used in the Chadwick clinics) may be dipped in tuberculin and applied to the forearm in the manner of a screw-driver. In using this method one should bear in mind that we have no measure of the amount of tuberculin, no accurate measure of the hypersensitivity, and a probable error of 20 per cent too few reactors.

3. Percutaneous Test: This test is mentioned but not recommended to those who object to a blunt instrument and a needle. The skin over the sternum is thoroughly cleansed with ether, a piece of concentrated old tuberculin is rubbed into the skin, and the reaction is read in 48 hours.

4. Diagnostic Subcutaneous: This test is used only occasionally in sanatoria on well selected and well controlled cases. Its greatest application comes when shadows in the x-ray, such as abscess, malignancy, *et cetera*, simulate tuberculosis and an immediate diagnosis is highly desirable. Weak graduated doses of tuberculin are given subcutaneously until a focal reaction occurs around the lesion or its absence is verified. General systemic reactions are also significant.

Delayed Reactions and Negative Results: Occasionally a reaction may be delayed as late as ten days; however, this is very uncommon. In grave tuberculosis the test may become negative—*anergy*. A partial anergy or reduced hypersensitivity may be observed in pregnancy, cachectic states, pneumonia, typhoid, *et cetera*. Chadwick has found that measles has no effect upon the degree of reaction to tuberculin. This sensitivity, although reduced in this condition, is never entirely absent and may be elicited by increasing the dose of tuberculin administered. It was the belief at one time that infections of bovine origin would react only to tuberculin made from the bovine bacillus, infections of human origin would react only to tuber-

culin made from human bacilli, *et cetera*. Such a degree of specificity does not exist.

USES OF TUBERCULIN

As has already been said or intimated, tuberculin has many valuable applications of which the field of epidemiology is the most fertile. Epidemiology depends almost entirely on the tuberculin test and is more scientifically studied and of more value when the Mantoux reaction is the method of choice.

1. *Epidemiology*—The Study of Tuberculous Infection: The sooner physicians begin to use the same substances and the same standards for determining the severity of reactions, the sooner we shall get comparable results. This criticism accounts for the great differences in the results of many studies of tuberculous infection.

F. J. Allen in 1928 made a study of the tuberculin skin reactions among 1,905 Collieri African natives, using the Mantoux method with 0.1 cc. of 1:5,000 O. T. The raw recruits gave 26.0 per cent positive reactors; natives who had been working from one to six months, 46.62 per cent; from six to twelve months, 58.88 per cent; from one to two years, 65.12 per cent; over ten years, 56.86 per cent; average for all lengths of service, 63.0 per cent. This shows a rapid increase in positive reactions in the early period of a native's industrial life, indicating early and rapid infection.

There is abundant evidence that the interior of Africa was free from tuberculosis before the advent of the white explorer, and from observations made by physicians within the last two decades, we learn how the disease spreads. At Bassam on the Ivory Coast, Sorel found that 22.9 per cent of the inhabitants reacted to tuberculin, whereas at Bornake, 350 kilometers inland, only 2 per cent were sensitive to tuberculin. Ziemann, testing adult Bantu natives in German South Africa, found only 4.4 per cent reactors. In all instances where the children reacted, their parents had served in the homes of Europeans.

During the World War, Borrel tested the French African troops recruited from Senegal to the Frejus camp and only 4 to 5 per cent reacted to tuberculin. The mortality

from tuberculosis increased from 48 in 1916 to 557 in 1918.

Aranson, determining the incidence of tuberculous infection in some communities in the South (Tennessee and Mississippi), found the total incidence of reactors among the white children to be 50.9 per cent as compared with 73.9 per cent in Philadelphia. Of colored children in the South the incidence of reactors was 60.4 per cent, while in Philadelphia it was 73.2 per cent. He used the Mantoux test in doses of .01 mg. O.T. prepared fresh daily from a standardized potent tuberculin. Von Pirquet found that the incidence of infection increased with advance of years in childhood. Under one year of age he found 5 per cent; at the age of thirteen he found that 93 per cent reacted to tuberculin. Hamburger and Monti, using the same test, found a higher incidence of infection. After the age of nine years 93 to 95 per cent reacted positively.

In 1915 Veeder and Johnston of St. Louis found that by the time the age of twelve or thirteen had been reached only 48 per cent were positive reactors.

In 1924 Slater made a study of 1,654 school children in a rich farming community and found an average of 10 per cent reactors.

Chadwick and Zachs in 1929 found 28 per cent reactors among 42,071 school children. McCain found 22.7 per cent of white and 27.34 per cent of colored school children out of a group of 25,048 to be positive reactors. Rathbun's study revealed that 41 per cent of the school children in the larger cities and 25 per cent in the smaller towns reacted positively to tuberculin. Hethington's report from Philadelphia showed that 72.6 per cent of the children from certain schools of the city reacted positively. In another group 37.7 per cent were infected at the age of five years and 90.2 per cent at the age of eighteen years. McCain, writing in the Southern Medical Journal, states, "It is my conviction that not more than 25 to 30 per cent of the whole population of the conference area would react positively to the tuberculin test". He used as his basis the Mantoux test in doses of 0.1 mg. O.T. Our experience here in Alabama leads us to believe that the percentage of reactors is much higher than that found by some ob-

servers. In a small group we found 50 to 55 per cent of school children reacting to the test. We also cite the findings of Aranson on a much larger group; he found an average of 55 per cent reactors among colored and white children of the rural South. To be accurate and draw unquestionable deductions, one should use a tuberculin of standardized potency, prepared fresh daily in dilutions of .01 mg. and 1.0 mg. per 0.1 cc. The Mantoux test is generally accepted by all to be the more accurate and scientific method.

Smith, using the Mantoux and Von Pirquet tests on the same children, found from 4 to 25 per cent more reactors with the Mantoux than with the Pirquet test. Aranson and Zachs found that among 1,368 patients in the Fernald School For Feeble Minded, a total of 1,129 or 82.5 per cent reacted to the intracutaneous test, compared with 854 or 62.5 per cent to the Pirquet test—20 per cent more reactors with the Mantoux. In another town the same workers found that, out of 2,642 children tested, 1,000 or 37.8 per cent reacted to the two dilutions of O.T. by the Mantoux method against 417 or 15.8 per cent by the Von Pirquet method; here we have a difference of 22 per cent. For practical purposes the Von Pirquet is considered equivalent to the Mantoux with 0.01 mg. O.T. In Aranson and Zachs' series 5.1 per cent more of the total reacted to the 0.01 mg. than to the Pirquet test. The percutaneous test is claimed to be the diagnostic equal of the Von Pirquet. Numerous observers over the country have completed series using single doses of 0.1, 0.01 mg., and even less O.T. and made comparison with the work of Aranson, Myers, and others. It seems a waste of time and money to attempt to compare results when the methods are not even comparable.

Our results here in Lee County reveal that we get about 50 per cent more reactors in going from the 0.01 mg. dose to the final dose of 1.0 mg.

2. *Method of Case Finding*: Next to the study of epidemiology, tuberculin testing finds wide usage as a method of tuberculosis case finding. School children everywhere are being given the tuberculin test and the positive reactors are examined and x-rayed for the presence of disease. This

method of case finding has already been extended to adults in some sections of the country. The well informed and aggressive physician now knows that grave latent tuberculous lesions may exist, undiscovered by physical examination. All contacts of a case of tuberculosis should be tuberculin tested and the positive reactors x-rayed. Without the x-ray almost all the childhood types of tuberculosis and the majority of latent lesions will be missed. The physician now knows that the discovery of a case of tuberculosis does not end with the disposal of the case, but requires a careful study to determine the source of the infection (when obscure) and to prevent others from contracting the disease. The members of the family should be tuberculin tested to determine non-infection, infection, or the presence of latent tuberculous lesions which may later break down into acute disease, unless special care is taken. The physician who treats the family in addition to treating the case renders a real service and goes far in our fight against tuberculosis.

3. *Method of Ruling Out Tuberculosis:*

In sections of the country where tuberculous infection is low one may be able to rule out tuberculosis in doubtful or suspicious cases by means of a negative tuberculin test. Myers cites the case of a girl who had been on treatment for tuberculosis for four years following an attack of pneumonia, who was found to be free of physical signs and had a negative x-ray. The tuberculin test was negative but still she insisted that she had tuberculosis. The subcutaneous test was resorted to and there was no local, focal, or constitutional reaction to the last dose of 10.0 mg. A negative tuberculin test to 1.0 mg. O.T. is the strongest evidence obtainable against the existence of tuberculous infection. I have had two such cases in my experience where a negative tuberculin test helped to rule out tuberculosis in suspicious and indefinite lesions. Krause says, "Too much money has been spent, too many x-rays taken, and too much valuable time has been lost trying to make tuberculous individuals out of non-tuberculous patients, when a simple tuberculin test would have disclosed the fact that the patient was not infected". One should always bear in mind the well known exceptions to the rule. Occasionally in pulmonary lesions simulat-

ing tuberculosis, such as abscesses, malignancy, cysts, et cetera, where an early diagnosis is desirable, a differentiation can be obtained by the intracutaneous or subcutaneous administration of tuberculin.

Steidl and Heise have changed our views on the diagnostic subcutaneous test with their recent article in the *American Review of Tuberculosis*. In a study of 419 cases at Saranac Lake, they arrived at the following conclusions:

1. The fact that a patient has no symptomatic reaction and no focal reaction as determined by physical signs and roentgenographs to 0.01 cc. of Old Tuberculin administered subcutaneously does not exclude the diagnosis of tuberculosis.

2. Conversely, it may occasionally happen that the natural evolution of a neoplastic or a non-tuberculous inflammatory process in the lung may simulate a focal reaction.

3. The administration of Old Tuberculin subcutaneously as a diagnostic method in suspected pulmonary tuberculosis is a procedure of limited value, for the intracutaneous test gives somewhat parallel information and is less inconvenient to the patient.

4. *Useful in the Diagnosis of Childhood Type and Latent Tuberculosis:* Frequently hilum shadows, apical lesions, and early tuberculous infiltrations are difficult to differentiate from the surrounding structures. One would be greatly handicapped in making one of the above diagnoses in the face of a negative tuberculin test to the 1.0 mg. dose. The exact nature of many cases of pleurisy with or without effusion could be ascertained if the tuberculin test were administered more frequently. The tuberculous etiology of a given pleurisy would be greatly doubted in the face of a negative tuberculin test (1.0 mg.).

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Alabama State Board of Health Laboratory Manual.

A CASE OF PELLAGRA TREATED WITH INSULIN*

GROESBECK WALSH, M. D.

and

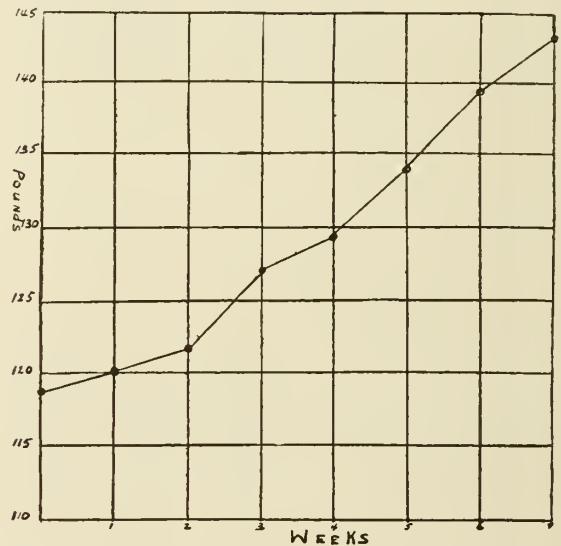
WILLIAM G. MORGAN, M. D.
Fairfield

We feel that the genesis of fattening by insulin was contained in the paper by Seale Harris¹ published over eight years ago. For a recent review of the literature—excellent bibliography and interesting discussion—the reader is referred to the last paper of E. S. Nichol² which was read before the Southern Medical Association at the

1931 meeting. The literature on this subject is already voluminous, and insulin apparently is entering into an ever-widening field of usefulness.

CASE REPORT

Case No. 74722, E. McC. This patient, a colored female, age 29 years, is a patient in this hospital at the present time. She was first seen in September, 1931. At that time her chief complaint, as given to the historian, was "blood rushing to head and female trouble." These, as well as many more indefinite complaints, had been present for a year or more. Three months before admission a physician had been consulted who gave her six doses of medicine in the vein. Two months before admission patient's condition grew worse, and since then, according to her husband, there had been some very



definite mental disturbances. He described her mental symptoms by saying that she acted like someone "getting a new religion." The memory was good; there had been no unconscious seizures; and she had never been wild or incoherent. She took very little interest in home and surroundings; and often talked of seeing visions and of talking with God. On taking a detailed system history it was learned that there was a rash on arms and legs; sore mouth; pain and tenderness in lower abdomen; irregular menses; tenderness of vulva and vagina; very poor appetite; and loose stools. All these symptoms had been present for several months, with remissions and exacerbations.

Physical examination showed a rather poorly nourished negress confined to bed and who appeared ill. She was somewhat drowsy and not very cooperative. Her tongue and pharynx were red and sore. There were small papular eruptions scattered over the body, and there was a dry scaly eruption on the neck, hands, forearms, and anterior surface of the legs. The vulva and vagina were red and tender; the uterus was enlarged and nodular; and there was generalized tenderness over the

*From the Medical Service of the Employees' Hospital, Fairfield.

1. Harris, Seale: Hyperinsulinism and Dysinsulinism, J. A. M. A. 83: 729-733, Sept. 6, '24.

2. Nichol, E. S.: Insulin Fattening, Late Results in 63 Cases. South. M. J. 25: 405-410, April '32.

lower abdomen. Other than the above findings, physical examination was negative.

The laboratory findings revealed nothing of note other than a mild anemia and no free hydrochloric acid in gastric contents.

She was put on dilute hydrochloric acid and a liberal pellagra diet with brewer's yeast, and her symptoms cleared up remarkably after one month in the hospital. On discharge she was mentally clear, with no complaints other than the pelvic symptoms and a poor appetite.

Specific directions were given her as to diet, but due to lack of funds this was not adhered to. As a result of this, she has been in the hospital three times prior to the present admission. Because of the pelvic symptoms, hysterectomy had been thought of, but was not done because of the patient's mental state. After a few weeks in the hospital she would seem perfectly clear mentally, but after home treatment she invariably reverted to the picture of the first visit, although none of the symptoms were as severe as at that time.

For two and one-half months prior to this admission her husband had managed to provide a fairly well balanced diet, and she had gained eight pounds in weight. Her mental state was good, and her only symptoms were malaise, a dry scaling skin, and a poor appetite, along with rather persistent pelvic symptoms. She insisted upon operation.

On this admission, November 1, 1932, she was admitted with the idea of preparing her for an operation. Her weight at that time was 118 pounds. Insulin was begun with units 3 three times a day. This was raised to units 5 three times a day on the third day; to units 10 three times a day on the fourth day; and after fifteen days was raised to 40 units a day. This amount was given in three daily doses: 10 units at midday and 15 before the other two meals. There has been a steady gain of weight. She has been in the hospital now for seven weeks, and her weight is 143½ pounds. In addition to this gain in weight, the whole mental attitude of the patient is different; she no longer mopes around, and her appetite is enormous. Her skin condition has completely cleared up; she looks bright and alert; and says she feels like a different person.

Blood sugar determinations have been made at least weekly, and have varied from 55 mgs. per 100 cc. to 90 mgs. There have never been any untoward symptoms, not even the mildest signs of hypinsulinism.

Peptic Ulcer—Examination of the stools is an extremely important feature in connection with gastric and duodenal ulcer. Rarely, perhaps never, if the examinations are carefully done, do ulcers exist during a stage of activity in the absence of occult blood. Furthermore, the presence or absence of occult blood is a very valuable feature in determining whether or not relief, and so healing of the ulcer, is being accomplished either by surgical or medical measures.—*Lahey—Penn. M. J., Dec. '32.*

THE STATUS OF DIPHTHERIA IMMUNITY IN A TYPICAL ALABAMA COUNTY*

O. L. CHASON, M. D., M. P. H.
Montgomery

It is becoming increasingly a matter of common knowledge that the fundamental of diphtheria control is immunization. Strict isolation of all cases is impossible. Carriers of the bacillus are everywhere. Contact with these is inevitable, and, with social customs what they are, the fact that almost all persons do not at some time have the clinical disease is due to a usual fortuitous balance of virulence and local and systemic resistance. Separating these factors in considering diphtheria prevention, it has been authoritatively and generally concluded that control of the bacillus of diphtheria can at best be only partial, that local resistance is largely outside the realm of deliberate control, and that reduction in the morbidity and mortality of the disease must depend on the development of systemic resistance, usually termed immunity.

Whatever factors may play a part in systemic immunity to diphtheria, we are most concerned with the presence in the body of antitoxin sufficient to neutralize the amount of toxin given off by the invading organisms, or perhaps more basically, with the ability of the body to produce this antitoxin. Antitoxin injected is gradually destroyed or excreted, the reliable term of such passive immunity being less than a month, but that produced within the body itself is kept at a fairly constant concentration in the blood and gives permanent or long continued immunity to the disease. Therefore, the antitoxin in the blood of an individual is an index of his immunity when it has not been administered or, in the case of an infant, been received from the mother. The Schick test serves as a practical and fairly accurate means of determining immunity, showing whether or not sufficient antitoxin is present in the blood to protect against a clinical attack of diphtheria.

During the school term of 1930-1931, 2,824 white persons mostly of school age, of Lee County, Alabama, were given the

*Read before the Association in annual session, Mobile, April 19, 1932.

Schick test. The Gilliland toxin was used, that diluted just before injection for approximately 2,400 of the tests, while the remainder were made with the new type received in its dilute form. The injections were given on the flexor surface of the forearm from two to three inches below the elbow, using tuberculin syringes and 3/8 or 1/2 inch needles of 26 or 27 gauge, and with short bevel. The results were read on the third or fourth day and all believed to be positive or pseudo-reactions were seen again on the seventh or eighth day. No controls were made, as by a second reading it was apparently possible to differentiate the positives and pseudo-reactions with chance of mistake in very few instances. The pseudo-reactions were, of course, classed as negative on the last reading, except when combined with positive.

For each individual given the test the following data were obtained: Name, address, age, sex, history of previous immunization with toxoid or toxin-antitoxin, and result of test, with two readings for those showing any inflammatory reaction. We assume that the age entries are correct, as when the child was uncertain, and often regardless of that, the teacher's roster was consulted. Age at last birthday was recorded. It is probable that a small proportion of those listed in the following tables had in fact had toxoid or toxin-antitoxin and forgotten it. This would apply to the middle groups, as the older ones would remember and parents of the youngest group gave the information. It is not likely that the figures were seriously affected by this source of error.

Table I

Summary of Results of Schick Tests
Persons with Negative History for Toxoid and
Toxin-Antitoxin—Total Group Tested in Lee
County During School Term 1930-1931

Age Groups	Total Number Persons	Positive Reactions		Negative Reactions	
		Number	Percent.	Number	Percent.
5 and Under.....	43	24	55.8	19	44.2
6 - 7.....	331	103	31.1	228	68.9
8 - 9.....	357	88	24.6	269	75.4
10 - 14.....	755	108	14.3	647	85.7
15 - 19.....	268	36	13.4	232	86.6
20 and Over.....	58	6	10.3	52	89.7
Total	1812	365	20.1	1447	79.9

Of most interest and practical application in the results for the entire county, as shown in Table I, is the increasing immunity with increasing age, or more fittingly expressed, the greater susceptibility of the younger children. In proportion, over five times as many children five years of age and below were susceptible to diphtheria as were adults twenty and above. Noting the groups between, we see that natural immunity increased rapidly between the age of six and the group 10-14 years; less rapidly afterward. Assuming the average age in this group to be twelve years, we note that the immunity status of these children differed little from that of the adults.

It seems likely that natural immunity develops because of contact with the bacilli of the disease. When clinical diphtheria has not resulted it has been due to the presence of insufficient numbers or to slight virulence of the organisms, or to local resistance at the site of implantation. I have personally found Schick positive individuals temporarily carrying virulent diphtheria bacilli without developing the disease. At best, however, the conditions are precarious for the person. The physician naturally realizes and teaches the desirability of early immunization with toxoid, by which method practically all can be rendered immune with absolute safety and little usual reaction. The failure of a great many parents to obtain it for their young children is illustrated by and accounts for the high morbidity rate and the needlessly continuing mortality from diphtheria in Alabama. Table II gives these rates for 1930, divided by age groups corresponding approximately to the preschool and grade school ages, and those above.

Table II

Diphtheria Reported in the State of Alabama 1930
—Reports Not Specifying Age Omitted

Age Group	Estimated Midyear Popula- tion 1930	Cases			Deaths		
		Number	Percent of Cases	Rate Per 100,000	Number	Percent of Deaths	Rate Per 100,000
0-5 Yrs.	378,922	904	60	238.6	157	83	41.4
6-11 Yrs.	391,128	423	28	108.1	24	13	6.1
12 Yrs. & Over.....	1,883,467	186	12	9.9	7	4	0.4
Total.....	2,653,517	1513	100	57.0	188	100	7.1

No statistician is required to interpret these figures. They are similar from year

TABLE III—Schick Test Results Grouped by School and Community; Individuals with No History of Immunization with Toxoid or Toxin-Antitoxin; Subdivisions for Age Groups

School or Place of Clinic	Age 0-5 yrs.				Age 6-7 yrs.				Age 8-9 yrs.				Age 10-14 yrs.				Age 15-19 yrs.				Age 20+yrs.				All ages			
	Positive		Tests	%	Positive		Tests	%	Positive		Tests	%	Positive		Tests	%	Positive		Tests	%	Positive		Tests	%				
	No.	%			No.	%			No.	%			No.	%			No.	%			No.	%						
Opelika	6	3	50.0	1	1	100.0	0	0	0	0	0	0	0	0	0	0	1	0	0	9	3	33.3	17	7	47.1			
No. Side Sch.....	0	0	0	21	15	72.3	12	5	41.6	23	12	52.1	3	2	66.7	0	0	0	0	0	0	59	34	59.3				
So. Side Sch.....	0	0	0	18	13	72.2	18	9	50.0	17	2	11.8	0	0	0	0	0	0	0	0	0	53	24	47.1				
Jr. High Sch.....	0	0	0	0	0	0	0	0	0	39	11	29.7	17	4	23.5	0	0	0	0	0	56	15	26.7					
Sr. High Sch.....	0	0	0	0	0	0	0	0	0	4	1	25.0	28	8	28.5	1	0	0	33	9	27.2							
W. End Sch.....	12	10	83.3	16	5	31.2	8	2	25.0	16	3	18.7	0	0	0	3	1	33.3	55	21	38.1							
Peopl. Sch.....	6	5	83.3	21	2	9.5	16	9	56.2	26	2	7.7	8	1	12.5	0	0	0	17	19	24.6							
Auburn	3	3	100.0	30	12	40.0	23	10	43.4	32	5	15.6	0	0	0	1	1	100.0	89	31	34.8							
Auburn High Sch.....	0	0	0	0	0	0	0	0	0	36	10	27.7	45	8	17.7	4	0	0	85	18	21.1							
Phenix City	0	0	0	37	9	24.3	39	14	36.3	74	12	16.2	0	0	0	0	0	0	150	35	23.3							
Brick Sch.....	1	0	0	60	20	33.3	83	18	21.8	82	10	12.1	2	0	0	0	0	0	228	48	21.0							
N. Girard Sch.....	0	0	0	25	5	20.0	23	3	13.0	6	1	16.6	0	0	0	0	0	0	54	9	16.6							
Girard El. Sch.....	0	0	0	36	3	8.3	50	2	4.0	86	10	11.6	0	0	0	7	1	14.2	179	16	8.9							
St. Patrick Sch.....	11	0	0	28	10	35.7	29	3	10.3	39	2	5.1	3	0	0	0	0	0	110	15	13.6							
Central H. Sch.....	0	0	0	0	0	0	0	0	0	129	17	13.9	86	6	6.9	1	0	0	216	23	10.6							
Rural	1	1	100.0	24	5	20.8	28	7	25.0	61	4	6.2	28	3	10.7	10	0	0	152	20	13.2							
Loachapoka Sch.....	2	2	100.0	5	1	20.0	6	2	33.3	12	0	0	5	0	0	5	0	0	35	5	14.3							
Salem Sch.....	0	0	0	3	1	33.3	10	1	10.0	25	2	8.0	7	1	14.3	2	0	0	47	5	10.6							
Beauregard Sch.....	0	0	0	5	1	20.0	9	2	22.2	26	3	11.5	21	3	14.3	8	0	0	69	9	13.0							
Beulah Sch.....	1	0	0	1	0	0	3	1	33.3	22	1	4.8	14	0	0	7	0	0	48	2	4.2							
Total.....	43	24	55.8	331	103	31.1	357	88	24.6	755	108	14.3	268	36	13.4	58	6	10.3	1812	365	20.1							

to year, and 1930 was selected only because it was the census year and population data were more easily available. The results of Schick tests show much greater susceptibility in the age group five and under; the morbidity rate shows even more selectivity for these young children, and the mortality rate for them is so much greater than for older persons, 103 times as great in 1930 as for those twelve and over, that the earlier whispered admonition become a shouted order that we give these babies the protection they so urgently need.

An opinion widespread among the laity and not uncommon in the profession is that an attack of diphtheria develops permanent immunity to the disease. While no effort was made in our Schick test program to elicit a history of diphtheria, a few children who doubtless knew what the doctor and parents had said volunteered the statement that they had had the disease. In running through a copy of the original lists I find 29 of these. Sixteen were Schick negative and thirteen were Schick positive. I will go no further than to say that diphtheria does not always produce lasting immunity. Rosenau¹ says that second attacks sometimes occur within a few weeks, while the patient is still in the hospital, and that this lack of protection is due to insufficient stimulation of antitoxin production by the toxin liberated.

The statement is frequently made that rural people develop less natural immunity to diphtheria than do city people. Our results were in absolute contradiction to this. This is evident in Table III.

While Lee County boasts no metropolis, Opelika has a population, 1930 census, of 6,156, Auburn of 2,800, and Phenix City, including Girard in Russell County, 13,862. The rural population is 20,508, 6,881 of whom are white. It is interesting to note the percentage of susceptibility in these areas.

In Auburn and Opelika living conditions are comparable to those in the better areas of large cities. In the schools, a small proportion of the children come in from the surrounding country. In the figures to be given, the children of the two mill schools

in the suburbs of Opelika are included. In this total group, 524 persons not having had immunizing agents were tested. Of these, 178, or 33.9 per cent gave positive reactions.

Phenix City is in big part a residential area for cotton mill workers of Columbus, Georgia. Living conditions are mainly poor, though a small proportion of the population lives well on Summerville Hill. In these schools, 937 non-immunized persons were tested, with 146, or 15.6 per cent, reacting positively.

The rural part of the county is populated largely by negroes. The white people do not usually live close together, and are economically as well off as in most farming country. In the five consolidated schools, containing the majority of the rural children of suitable age, 351 not actively immunized were tested, and only 41 or 11.7 per cent were found susceptible to diphtheria.

It should be explained that the same type of test material was used for all of these groups; for example, some of the same batch was used for the Loachapoka rural school that had 14.3 per cent reactors and the Northside School in Opelika that had 59.3 per cent. The writer read the results in all of them. Naturally, some differences exist in the age groups, but far too little to account for the results. While no general conclusion on the broad question of the varying susceptibility to diphtheria of urban and rural population should be drawn from a small series obtained in only one county, one thing seems certain and is important: presuming that natural immunization has occurred through contact with the organisms, the rural children of Lee County had been more exposed to diphtheria than had the children in town. It follows that it is unsafe to neglect giving toxoid to country children on the theory that exposure is unlikely.

SUMMARY AND CONCLUSIONS

1. In Lee County, 1,812 non-immunized persons, mostly of school age, were given the Schick test for susceptibility to diphtheria. Of the total, 20.1 per cent gave a positive reaction. In the age groups, the percentage decreased from 55.8 for chil-

1. Rosenau: Preventive Medicine and Hygiene, D. Appleton and Co., N. Y.

dren below six to 10.3 for persons twenty years and over.

2. The diphtheria case rate in Alabama in 1930 was 238.6 per 100,000 for the group of persons reported as under six years and was 9.9 per 100,000 for the twelve years and over. The death rate was 41.4 and 0.4 for these respective groups.

3. These figures impress the dire need for more general active immunization against diphtheria. This should be done early in the child's life, preferably between six months and a year of age.

4. Children above ten years of age should have a Schick test before toxoid is given. This might better be done for all over six. Those below six may well have toxoid without preliminary test. The test should always be made following toxoid administration, preferably in three to six months after.

5. Of twenty-nine children volunteering a history of diphtheria (unverified) thirteen were Schick positive. A Schick test should always be made a few months after an individual recovers from diphtheria, and reactors should be actively immunized.

6. Susceptibility of rural children, as measured by the Schick test, was found to be much lower than for the urban groups. There is ample indication that country infants need toxoid.

ELECTROCARDIOGRAPHIC INTERPRETATION OF THE CARDIAC ARHYTHMIAS*

T. K. LEWIS, M. D.
Birmingham

It is my purpose to present this discussion of the interpretation of the cardiac arrhythmias by the *electrocardiogram* in the most practicable way possible; in order to do this it is necessary to refer briefly to the normal cardiac mechanism.

Anatomy of the Conducting System of the Heart: The heart may be described as consisting of two types of tissue, the conducting mechanism or neuromuscular tissue which originates and transmits the im-

pulse to the next type or muscular tissue which responds, by contraction, to the impulse brought from above, and which contraction produces the heart beat.

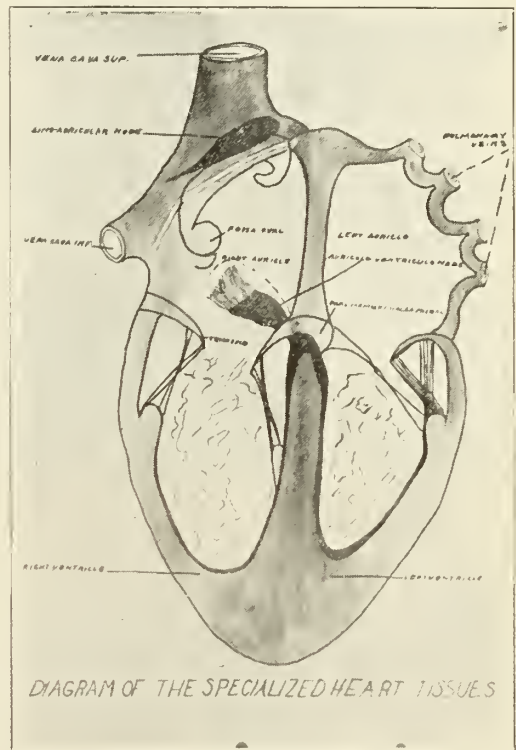


Figure 1

This specialized system or conducting system consists of specialized groups of neuromuscular cells. The uppermost one of these, called the pacemaker of the heart which originates the normal cardiac impulse, is a small group of cells located in the posterior wall of the right auricle at the junction of the superior vena cava with the right auricle. The impulse, originated here, passes down through the musculature of the two auricles without a special conducting system to the next group of cells of the system, the *auriculo-ventricular node* or *A. V. node*. From here the system is continued downward as a special bundle to the top of the interventricular septum—*bundle of His*—where it divides into two branches *right and left*, one for each ventricle. Passing downward on either side of the septum beneath the endocardium, each branch breaks up into a fine meshwork of fibers—the *arborization system*. These fibers then break up into a more extensive

*Read before the Association in annual session, Mobile, April 21, 1932.

meshwork called the *Purkinje fibers* which are distributed two or three to each muscle cell of the ventricular muscle mass, so that the impulse reaches the entire muscle mass simultaneously through the conducting system.

The Normal Electrocardiogram: The normal electrocardiogram consists of a series of peaks and valleys, arbitrarily called by Einthoven, "P-Q-R-S-T", to be explained as follows:

- P—small upright deflection 1 to 2 mm. high, the auricular contraction.
- Q—small downward deflection, passage through the septum, not always present.
- R—tall upright deflection, 10 to 15 mm. high, the initial ventricular event.
- S—downward deflection, negative phase of ventricular contraction, not always present.
- T—terminal event of ventricular contraction.

These are systolic events; from the beginning of "P" to the beginning of "R" is called the "P-R" interval and is the conducting time of the heart (normally from .12 to .20 sec.). "Q-R-S-T" the entire time of ventricular contraction normally .30 to .42 second. On the electrocardiogram the *ordinates* (vertical lines or upright lines) are time lines; between the larger line .20 sec. and between the smaller .04 sec. The *abscissae* (transverse or horizontal lines) are space lines, 1 mm. between the smaller and 10 mm. between the larger lines. Thus the time element of the different parts of the heart beat can be computed and the height of the waves estimated.

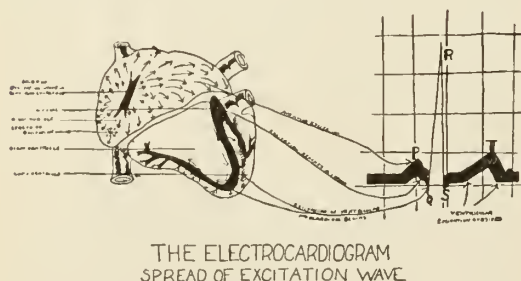


Figure 2

Classification of the Arrhythmias: (1) Those occurring at the pacemaker, S. A. Node; A-Sinus arrhythmia, B-Sino-auricu-

lar block. (2) Auricular muscle mass, the circus movement; A-Auricular Fibrillation, B-Auricular Flutter. (3) The premature beats or *extra-systoles* including the paroxysmal tachycardias. (4) The different types of heart block.

Those occurring at the pacemaker: There may be simply a waxing and waning of the heart beat with respiration and is noted as an irregular spacing upon the tracing or there may be a phasic or periodic slowing of the whole heart rate down to 8, 12 or 14 beats per minute, or there may be a profound slowing of the heart for a number of beats often causing syncope and occurring from disgusting sights, odors, or frights, the type occurring with respiration often seen in children.

Sino-Auricular Block: There occurs an occasional dropping out of one or two entire heart beats in an otherwise normal heart. The slow phase usually corresponds to two or four cycles of a normal heart beat, often seen in athletes and after acute infections.



Figure 3

Record in lead III showing sino-auricular block. Note that the long cycles are a trifle less than the length of two normal cycles. Record obtained from a boy, aged twelve years, without evidence of organic heart disease.

Those occurring in the auricular muscle mass, often called the circus movement, consisting of *auricular fibrillation* and *auricular flutter*: In these two conditions, the normal pacemaker of the heart becomes silent or inactive and is replaced by a self-perpetuating stimulus in the auricular muscle mass, traveling at a rapid rate and in a closed and circuitous path. In fibrillation it may be any ill-defined round-about oval or irregular closed path. This closed path in both conditions is limited to the muscle masses around the opening of the two cavae; in fibrillation the path is usually around the orifice of one cava, while in flutter the orifices of both cavae are included in the path. In both conditions the intrinsic auricular mechanism is profoundly altered; the rate of ventricular beat depends upon the integrity of the conducting system to conduct the rapid impulses coming

from the auricular muscle mass. In *fibrillation*, the auricular rate is usually between 450 and 600 per minute. The ventricular rate depends upon the ability of the conducting system to conduct the rapid and weak impulses coming from the auricular muscle mass. The conducting system usually transmits but varying and irregular numbers of them; therefore, in fibrillation there is a total irregularity of the heart. In listening to the heart, while at the same time we are counting the radial pulse rate, we notice that a great many of the heart beats are so weak they do not get through to the periphery. Therefore, in fibrillation we have a total irregularity of the heart and a pulse deficit of twenty-five beats or more between the count of the heart beats and the count of the radial pulse. On the tracing the "P" waves are absent and are replaced by the so-called "F" or fibrillary waves, and there is a total irregularity in the time of the occurrence of the ventricular waves.

Flutter: The auricular rate is usually between 300 and 450 per minute; there is usually a constant block present, say two to one or three to one block, so that clinically flutter is usually noted as a perfectly regular heart, though usually a rapid one. However, occasionally there is a varying block of the rapid impulses and an irregular heart is noted. The condition was not demonstrated to occur until the advent of the electrocardiograph. The "P" waves are definitely present in flutter and are noted as an up and down undulation of the string. The ventricular complex is usually seen occurring every second or third auricular wave. Either of the two conditions may be paroxysmal or permanent. Flutter is often accompanied by marked evidence of heart failure, dyspnea occurring upon the slightest exertion, while in fibrillation there may be no evidence of heart failure or marked symptoms of a failing heart.

Extra-Systoles (premature beats): In these a new pacemaker is formed and succeeds in elaborating and discharging an impulse ahead of or previous to the normal impulse; therefore, they are called premature beats or extra-systoles. This new center may be located in the auricular muscle mass (auricular extra-systoles), in the auricular-ventricular node (nodal extra-sys-

toles), or in the ventricular muscle mass (ventricular extra-systoles). Because of the prematurity of the impulse the beat precedes the normal beat; that is, the beat

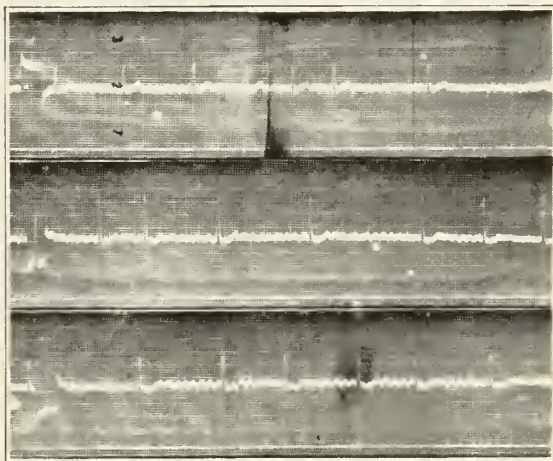


Figure 4

CD—Paroxysmal Auricular Fibrillation.

is out of time with the normal rhythm of the heart. In listening to the heart the beat is noted as being a quick coupling of the heart beat lub-dub-lub-dub, or two beats right close together, while at the radial pulse it is often noted as a dropped beat, the beat being so weak it does not get through to the periphery. In the auricular extra-systole the new center may be anywhere from just beyond the pacemaker to the A-V node. The entire mechanism of the heart follows upon this premature beat and the entire cycle of the heart is premature. The length of time following the premature beat depends upon the nearness to or away from the normal pacemaker, since the premature impulse spreads both upwards and downwards. The normal beat in process of elaboration is destroyed and the heart has to wait for the next normal impulse to be elaborated and discharged before it contracts. The "P" wave is usually downward and the Q-R-S-T element is usually much closer to the preceding beat than in the normal beat. *Nodal extra-systoles*: These occur in the junctional tissues, may only spread downward and cause a premature ventricular beat, or they may actually spread both downward and upwards (*retrograde conduction*) and cause a premature auricular as well as a premature ventricular beat, the "P" wave usually oc-

currence just before upon or after the "R" wave. In both the auricular and nodal extra-systoles the ventricular complex is normal in type since the impulse comes to the ventricles from above; that is, they are true supra-ventricular beats but are closer to the normal beats than the normal beats are to each other. In listening to the heart these beats are often noted as silences resembling heart block, though occasionally careful auscultation will elicit a low pitched sound which is the auricular contraction with a prolongation of the diastolic time of the heart. At the radial pulse they are noted often as dropped beats. *Ventricular extra-systoles*, due to an undue irritability of the ventricular muscle mass: The ventricles may originate a beat of their own out of time with the normal impulse coming from above and cause the ventricles to contract. The ventricles, having contracted from this premature impulse and having no normal impulse coming from above and no other premature impulse to stimulate it (the normal impulse having found the ventricles already contracted and not in receptive condition to respond to it), the ventricular muscle mass waits for the next normal impulse coming from above to contract. Therefore, the rest period or diastole after the premature beat is much longer than usual, and the rest period before the premature beat is much shorter than usual because the ventricle did not wait for the normal impulse to stimulate. The time of the premature beat, therefore, is usually the time of two normal beats and is spoken of as being compensated; that is, the long period after the premature beats make up for the short time before the premature beat. However, occasionally a premature beat may occur so early in diastole as to actually precede the normal auricular beat coming from above, and the ventricular muscle recover from the premature beat sufficiently to respond to the normal auricular impulse coming from above. These are called *interpolated* premature beats and are found between two normal beats. In the tracing, if from the left ventricle, the "Q-R-S" is upwards and "T" downwards in lead one and just reversed in leads two and three; if from the right ventricle, in lead 1 the "Q-R-S" is downwards and reversed in leads two and three and the "T" in opposite direc-

tion to the "Q-R-S"; usually the "Q-R-S" is widened. No "P" is seen preceding the "Q-R-S". Clinically, the extra-systoles are frequently encountered and may be found in a normal heart or where there is serious disease of the heart. The importance of their occurrence in the heart depends upon other evidence of heart disease that may be present. They may occur singly, in groups or in irregular numbers, or they may occur after every second beat (*pulsus bigeminus*) or every third beat (*pulsus trigeminus*). Digitalis in toxic doses produces the condition in which an extra-systole occurs after each normal beat (*coupled beats*).

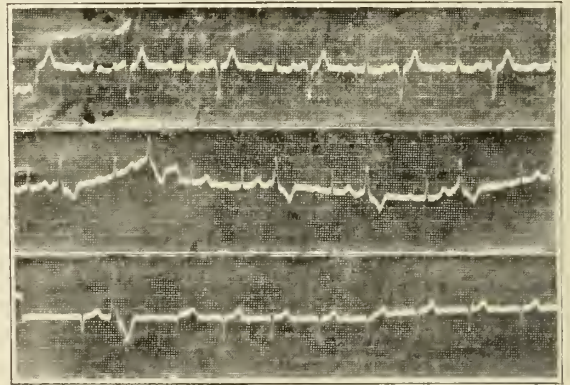


Figure 5

Paroxysmal Tachycardia: The extra-systoles may occur successively in short or long runs, thus producing a paroxysmal alteration of the heart beat called paroxysmal tachycardia; and according to site of impulse formation they may be *auricular*, *nodal*, or *ventricular tachycardia*. The tachycardia is often of brief duration and most usually very rapid, though it may be as slow as 90 beats per minute. The patient is usually very dyspneic and very greatly frightened; the attack comes on suddenly and as suddenly stops. The tracing shows a series of premature beats.

Heart-Block: Here there is a blockage of the impulse from above along the normal channels of impulse transmission. It may be anywhere along the conducting system, usually, however, the blockage is in the A-V node, bundle of His or within the branches within the ventricles. If in the A-V node, it is called *auricular-ventricular block*. This may only be delayed conduction from the normal time of .12 to .20 sec.

All cycles may be from .20 to .24 sec., up to .30 sec., or there may be a varying time of conduction from .20 to .30 sec., each cycle varying in its conduction time. This varying time may go on until one beat cannot get through at all and is dropped out, or second or third beat may fail to pass through. Partial block or two to one or three to one may occur, or there may be a complete blockage of all impulses from the auricles, complete block, in which the auricles are beating at one rate and the ventricles at another, *idio-ventricular rhythm*. Upon the tracing you note the change in the "P-R" time or the dropping out of one or more beats or note that every second or third beat is dropped or the auricles are beating at one tempo and the ventricles at another. In listening to the heart, in contradistinction to the premature beats, you hear an absolute silence during the long pause of the heart. Any patient with a pulse rate 35 to 50 beats per minute should have an electrocardiographic tracing taken to determine the question of heart block.

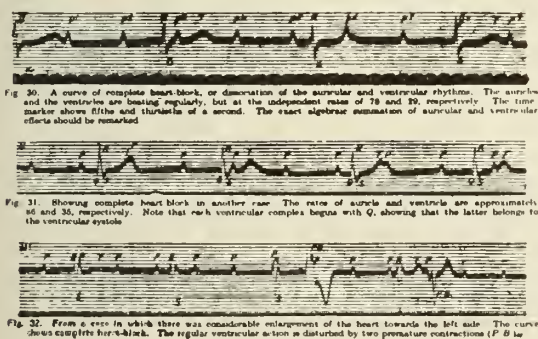


Figure 6

From Clinical Electrocardiography by Thomas Lewis.

Combined Arrhythmias: An arrhythmia of one type may be associated with an arrhythmia of any other type, but can be diagnosed only by the electrocardiogram.

Alternation of the heart is not included here since it cannot be diagnosed by the electrocardiogram.

SUMMARY

This brief outline of the various types of cardiac arrhythmias and their mechanism indicates the value of the *electrocardiogram* in differentiating the cardiac irregularities.

930 Martin Bldg.

Stone or Stricture in the Ureter—The presence of a stone or stricture in the ureter may give rise to abdominal pain, distention and even nausea and vomiting. The presence of pain with its distribution down the thigh, into the scrotum or urethra, the bloody urine and frequent micturition are diagnostic signs, but more often we are deprived of these earmarks.

It has been said that the symptoms due to ureteral stricture or stone have undoubtedly been the cause of more ill-directed abdominal and pelvic surgery than can be ascribed to any other disease. This sad truth is confirmed when we study the findings of Mazer, Dabney or Turlington in which they have shown that in the neighborhood of forty per cent of their stricture cases have abdominal scars, operation performed with the hope of relieving discomfort that still persists.

It is very true that there is a close relationship existing between diseases of the urinary tract and the symptoms referable to the gastro-intestinal canal. If there exists from the history or the clinical findings even one clue referable to the genito-urinary system it would be well to have a careful investigation from the urological standpoint.—*Field, N. O. Med. and S. J., Jan. '33.*

Removal of Wens—The skin over and about the wen is painted over with any suitable antiseptic and then infiltrated with a local anesthetic. Novocain may be used. An excellent local anesthetic for this work is composed of $\frac{1}{4}$ per cent butyn; 1 per cent antipyrin; 1 per cent (1-1000) epinephrin.

After a suitable wait for the anesthetic to become effective, the skin over the wen is carefully incised either with the cutting current needle, or with a coagulation knife hooked up to high frequency machine. This is bloodless and thus enables the operator to incise down to the sac wall, but without plunging the scalpel blade into the wen proper.

The wen usually is ruptured, if at all, during the subsequent efforts to dissect it free from the overlying skin and connective tissue.

It has been found that the elevators employed in submucous resection of the nasal septum permit the wen to be completely freed from its attachments without the slightest difficulty or danger of rupturing the sac. Using the sharp end of a Freer's submucous elevator carefully at first, the skin over the wen is slightly separated on each side of the incision; then further separation is made with the blunt end of a Freer instrument, after which the separation is easily completed with the double-ended Myerson elevator, which has a small sphere on one end and a slightly larger sphere on the other.—*Waring, Virginia M. Monthly, Jan. '33.*

NEXT MEETING OF THE ASSOCIATION

MONTGOMERY

APRIL 18-21, 1933

THE JOURNAL

OF THE

Medical Association of the State of Alabama

Editor-In-Chief

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Office of Publication:

519 Dexter Avenue.....Montgomery, Ala

Subscription Price.....\$3.00 Per Year

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent.

January 1933

REPORTS OF THE COMMITTEE ON THE COST OF MEDICAL CARE

After five years of study and analysis, this committee of fifty members of recognized leadership in many walks of life and representing organized medicine, as well as the various schools of philanthropy, sociology, public health, economics and the managerial control of hospitals, submits a final report under the caption, *Medical Care for the American People*. Prior to this volume, twenty-seven other published reports have made their appearance, outlining in detail many of the investigations and probings into this tremendously gigantic and complex field.

Into this last volume, effort is made to condense the meat and essence of all the others, together with the recommendations of the majority and minority reports. of which last there are four. The most important minority report is that signed only by doctors (seven in number). Every physician in Alabama will do well to study the entire volume.

A perusal of the heterogeneous personnel comprising this committee points to the impossibility of unanimity of views and recommendations to be entertained by the whole. The very complexity of the conflicting interests precluded such unity and it is well that there was not. A problem so abstruse, many-faceted and dipping down into the very taproots of our modern social structure, cannot be solved overnight nor

by rule of thumb. Both reports have been studiously prepared and the arguments presented to sustain each should not be summarily brushed aside, whether one agrees or not.

Five years ago, when this study was launched, this country was basking on the rosy hilltops of peace and financial plenitude; today, when the final report is released, it is plunged into the abysmal depths of human want and suffering. The "driving power of mercy" for afflicted mankind has likely never been so potent as now. Sociologists and all types of uplift-workers, feeling this urge acutely, are hurrying along in their efforts to arrive at a speedy solution which may or may not, embrace sound, lasting values. There is more than a modicum of similarity between this problem of adequate medical care, now being agitated and that of prohibition, which, immediately after the World War and riding the waves of fanaticism and hysteria, quickly landed in the safe harbor of the Federal Constitution. Subsequent events have clearly shown the un wisdom of not conducting sane and proper experiments in this particular sociologic sphere, where modifications, as indicated, might readily be made, rather than locking it, while still in the experimental stage, within the almost inaccessible recesses of the Constitution. Problems such as these, in which all civilization and humanity have a vital concern, must be approached in a spirit of utmost candour, humility and caution. The majority report, which is signed by thirty-seven (37) members of the committee, including seventeen (17) doctors, is given below:

RECOMMENDATIONS OF THE COMMITTEE

1

The Committee recommends that medical service, both preventive and therapeutic, should be furnished largely by organized groups of physicians, dentists, nurses, pharmacists, and other associated personnel. Such groups should be organized, preferably around a hospital, for rendering complete home, office, and hospital care. The form of organization should encourage the maintenance of high standards and the development or preservation of a personal relation between patient and physician.

II

The Committee recommends the extension of all basic public health services—whether provided by governmental or non-governmental agencies—so

that they will be available to the entire population according to its needs. Primarily this extension requires increased financial support for official health departments and full-time trained health officers and members of their staffs whose tenure is dependent only upon professional and administrative competence.

III

The Committee recommends that the costs of medical care be placed on a group basis, through the use of insurance, through the use of taxation, or through the use of both these methods. This is not meant to preclude the continuation of medical service provided on an individual fee basis for those who prefer the present method. Cash benefits, *i. e.*, compensation for wage-loss due to illness, if and when provided, should be separate and distinct from medical services.

IV

The Committee recommends that the study, evaluation, and coordination of medical service be considered important functions for every state and local community, that agencies be formed to exercise these functions, and that the coordination of rural with urban services receive special attention.

V

The Committee makes the following recommendations in the field of professional education: (a) That the training of physicians give increasing emphasis to the teaching of health and the prevention of disease; that more effective efforts be made to provide trained health officers; that the social aspects of medical practice be given greater attention; that specialties be restricted to those specially qualified; and that postgraduate educational opportunities be increased; (b) that dental students be given a broader educational background; (c) that pharmaceutical education place more stress on the pharmacist's responsibilities and opportunities for public service; (d) that nursing education be thoroughly remodeled to provide well-educated and well-qualified registered nurses; (e) that less thoroughly trained but competent nursing aides and attendants be provided; (f) that adequate training for nurse-midwives be provided; and (g) that opportunities be offered for the systematic training of hospital and clinic administrators.

In essence, this report urges:

(a) The formation of group practice around hospitals as "centres", such groups to include all medical and other personnel needed to render a complete and fully-rounded medical service and such service to preserve the personal relationship between physician and patient.

(b) That the cost of such group service be financed either:

(1) On a group payment basis (presumably voluntary) through insurance, or; (2) through taxation, or; (3) through the use

of both these methods. This statement, relative to the financing of medical care, constitutes its most radical recommendation. However, the committee wisely suggests that there be complete divorcement of medical service from any form of "cash payments" for sickness and that lay groups organized for profit have no legitimate place in the scheme.

The remaining recommendations cause no ground for disagreement on the part of the signers of the minority reports.

The chief minority report, signed by seven physicians, is given below:

I. The minority recommends that government competition in the practice of medicine be discontinued and that its activities be restricted (a) to the care of the indigent and of those patients with diseases which can be cared for only in governmental institutions; (b) to the promotion of public health; (c) to the support of the medical departments of the Army and Navy, Coast and Geodetic Survey, and other government services which cannot because of their nature or location be served by the general medical profession; and (d) to the care of veterans suffering from bona fide service-connected disabilities and diseases, except in the case of tuberculosis and nervous and mental diseases.

II. The minority recommends that government care of the indigent be expanded with the ultimate object of relieving the medical profession of this burden.

III. The minority joins with the Committee in recommending that the study, evaluation and coordination of medical service be considered important functions for every state and local community, that agencies be formed to exercise these functions, and that the coordination of rural with urban services receive special attention.

IV. The minority recommends that united attempts be made to restore the general practitioner to the central place in medical practice.

V. The minority recommends that the corporate practice of medicine, financed through intermediary agencies, be vigorously and persistently opposed as being economically wasteful, inimical to a continued and sustained high quality of medical care, or unfair exploitation of the medical profession.

VI. The minority recommends that methods be given careful trial which can rightly be fitted into our present institutions and agencies without interfering with the fundamentals of medical practice.

VII. The minority recommends the development by state or county medical societies of plans for medical care.

Then follows suggestions for safeguarding the distribution of medical costs, to which every physician can readily subscribe. That the minority committee saw fit to formulate such safeguards, points to

an appreciation, on their part, of the inadequacy of existing methods.

SAFEGUARDS IN DISTRIBUTION OF MEDICAL COSTS

This minority group agrees that any plan for the distribution of medical costs must have the following safeguards:

1. It must be under the control of the medical profession. (A "Grievance Board" to settle disputes, having lay representation, is permissible and desirable.)

2. It must guarantee not only nominal but actual free choice of physician.

3. It must include all, or a large majority of, the members of the county medical society.

4. The funds must be administered on a nonprofit basis.

5. It should provide for direct payment by the patient of a certain minimum amount, the common fund providing only that portion beyond the patient's means.

6. It should make adequate provision for community care of the indigent.

7. It must be entirely separate from any plan providing for cash benefits.

Then follows its final plea to County Medical Societies to evolve plans to furnish a complete medical service and states its reasons as follows:

COUNTY SOCIETY PLANS FOR MEDICAL CARE

The minority group states reasons for favoring thorough trial of the county society plan for furnishing complete medical care as follows:

1. It places responsibility for the medical care of the entire community on the organized physicians of the community.

2. It places medical care under the control of the organized profession instead of in the hands of lay corporations, insurance companies, and so on.

3. It places responsibility for the quality of service directly on the organized profession. It is in fact the only plan that guarantees quality of service and makes it the only basis of competition.

4. It removes the possibility of unethical competition, because it includes all the physicians of the community and fixes a fee schedule.

5. Solicitation of patients, underbidding for contracts and other evils of the usual insurance plans are eliminated.

6. Freedom of choice of physician is assured and the essential personal relationship of physician and patient is thereby preserved.

7. It is the only plan that includes all classes, from the indigent to the wealthy.

8. It is adaptable to every locality, both urban and rural.

9. It provides for a minimum cost of administration by operating on a nonprofit basis.

10. It provides for payment, by every patient with income, of a certain minimum amount before the insurance is in operation. The minimum rises with the patient's income. This provision alone will operate to avoid many abuses in all other types of insurance practice.

11. It provides for means of certification of disability separate from the attending physician.

12. Cash benefits do not form a part of the plan.

Viewed dispassionately, the points of variance in the two reports, while at times sharp, need not prove insuperable nor irreconcilable. It is to be regretted that the minority report did not see fit to stress the important role which the hospital now plays, and, in the future, is destined to play, in any satisfying scheme for medical care. This need has been created and fostered by the physician himself in a conscientious effort to give to his patient the best of care, as well as to create for himself a stimulating and scientific atmosphere in which to work. It is too much to hope for or to expect that highly trained young physicians, certainly in the more rural states such as Alabama, will be content to cast their lot in communities where no such facilities are available. Viewing the problem of financing as beside the issue (which might be solved in varying ways) such hospitals might well be utilized as material rallying points by the members of the county medical society for putting into practical application the scientific facts discussed in their meeting halls. Dr. Van Etten, of New York, in defending the minority report, struck the keynote when he said, "My personal opinion is that if all hospitals were open to all reputable physicians (not merely the laboratory facilities but bed space as well) many of the problems of public service would be solved". Or again: Dr. Cary, President of the American Medical Association, when discussing, at our last Association meeting in Mobile, the needs and rights of the younger physicians as pertain to adequate facilities, said:

"However, these (hospital) facilities can be had in counties where they practice, provided the responsibility for that particular expense is placed where it belongs—upon the public".

The rural doctor would not then chafe under his load of charity, if his time and gasoline could be conserved by concentration under one roof. Not alone this; he needs hospital facilities to be procured at a more reasonable and modest price for that large group of self-respecting patients upon whom a hospital emergency falls with crushing force and leaves no surplus to care

for medical fees. To accomplish the end desired—whether the doctors crystallize around a “hospital centre” or around their county medical society—team work of the finest sort will be essential. This means the smothering out of the individualistic tendencies so common to physicians, and the learning to think in terms of a medical “group”.

Is such a goal impossible of attainment?

This battle is sure to wage fiercest around the humanities, the traditions and ethics of our profession, which are as intangible and unstandardizable as love. Little as the public may realize, these are values which cannot be permitted to perish. Organized medicine today—yes, organized primarily for scientific pursuits, but not for economic struggle—finds itself steeped in a seething vat of commercialism with many forces seeking to absorb and appropriate it. The commodity which medicine alone possesses must be dispensed in a manner which will be both satisfactory to the people at large and acceptable to organized medicine—its dispensers. This means that the medical profession, speaking through its national, state and local organizations, must

furnish the requisite leadership and shape the policies.

In so far as Alabama is concerned, the medical profession occupies a unique and strategic position in any effort to modify or improve existing medical practice. Throughout the years, its people have leaned confidently upon it for guidance in all matters pertaining to health. The State Medical Association and the County Medical Societies, speaking through their respective boards of health, have a direct voice in all public health affairs. The interest manifested by each county medical society is a vital and continuing one. Is it unreasonable to suppose that, should circumstances and the changing order demand, through united effort on our part, the present set-up could not be further expanded so as to provide a medical service satisfactory to the people and acceptable to the profession? Every physician should give sober thought to this further utilization of our organization; for it may well be, as urged by the minority report, that within the county medical society are to be forged the weapons by which victories will be won.

J. N. B.

DEPARTMENT OF PUBLIC HEALTH

BUREAU OF ADMINISTRATION

J. N. Baker, M. D.,
State Health Officer in Charge

NATIONAL INSTITUTE OF HEALTH

As great as have been the discoveries in the past, still greater things may be expected by the world within the next generation in the fight that science, medicine and dentistry are making against disease. Never before in the history of the world have such resources both in money and scientific ability been available for research work. Not only is much research work being carried on through private sources but the government is attacking the problem through the National Institute of Health of the United States Public Health Service. The following short outline concerning this newly created institution should prove of interest.

The National Institute of Health, under the control of the Surgeon General of the United States Public Health Service, was

created in 1930 as a result of legislation fathered by Jos. E. Ransdell, then a United States Senator from Louisiana. It is an enlargement of the old Hygienic Laboratory, and is the scientific research center of the Public Health Service. Its function is to ascertain the cause, prevention and cure of diseases affecting human beings. The act provided for an appropriation of \$750,000, which is now being expended in the construction of two splendid buildings in Washington. It also authorized the Secretary of the Treasury to accept gifts for research in problems relating to the health of man.

Although the financial support for research work has been comparatively small in the past, government scientists have made extremely valuable discoveries concerning such diseases as malaria, pellagra, hookworm, tularaemia (rabbit fever), undulant fever, psittacosis (parrot fever), ty-

phus, Rocky Mountain spotted fever, and many others.

The Public Health Service, of which the National Institute of Health is a division, has done excellent work since its creation in 1798. Its qualities of leadership were displayed strikingly in the great fight against bubonic plague at San Francisco and New Orleans, with the result that never since has bubonic plague threatened the health of our people. In 1905, during the last outbreak of yellow fever in the United States, the Public Health Service in co-operation with local doctors conducted a memorable battle against that dread disease, drove it out of the country, and the nation has been free of it ever since.

The decrease in the death rate, which has increased the average expectancy of life from 49 years in 1900 to 56 years in 1925, an increase of 18 per cent, is due to a large extent to the medical and dental professions and the Public Health Service.

Many fields in medicine are open for discoveries by the research workers. Many different laboratories are trying to discover the cause of the common cold, influenza, cancer and numerous other conditions. The National Institute of Health with the backing of the United States Government and the co-operation of private agencies should be of tremendous value in lowering the death rate of this country and discovering the causes of and working out preventive measures for diseases.

BUREAU OF LABORATORIES

L. C. Havens, M. D., Director

PROGRESS OF HOOKWORM CONTROL IN HOUSTON COUNTY

The sandy Gulf coastal plain has some of the heaviest hookworm infestations in the world. In the southern counties of Alabama, therefore, hookworm control has been, and still is, a major public health problem. In 1928-29 the Alabama State Board of Health¹ made surveys of the hookworm *incidence* and *intensity* for every county of the State. This evaluation of the situation in each county furnishes a base line by which, from time to time, the progress made by control measures can be deter-

mined with a reasonable degree of accuracy.

Incidence alone, as determined by microscopic examination of the feces, gives an incomplete, and oftentimes, erroneous conception of the hookworm problem in a given area. In order to gain an accurate knowledge of the severity of the disease, data regarding *intensity* must also be available and these can be obtained only by actual count of the ova in a weighed amount of feces. From the number of ova per gram of feces the total number of worms can be estimated, since it has been found, by actual worm count, that the female hookworm lays an average of 44 eggs per gram of feces per day. By plotting a curve of the number of specimens in each intensity group a weighted mean is obtained which can be expressed by a single figure.

A resurvey of Houston County has just been completed. In 1929 the intensity index, expressed as the weighted mean ova count was 10, and the incidence, as determined by salt flotation, was 53%. The accompanying map shows the intensity index now to be 2, and the incidence 44%. All but about 9% of the children have light infections, below 50 worms per person. In other words, *hookworm disease has ceased to be a public health problem in Houston County.*

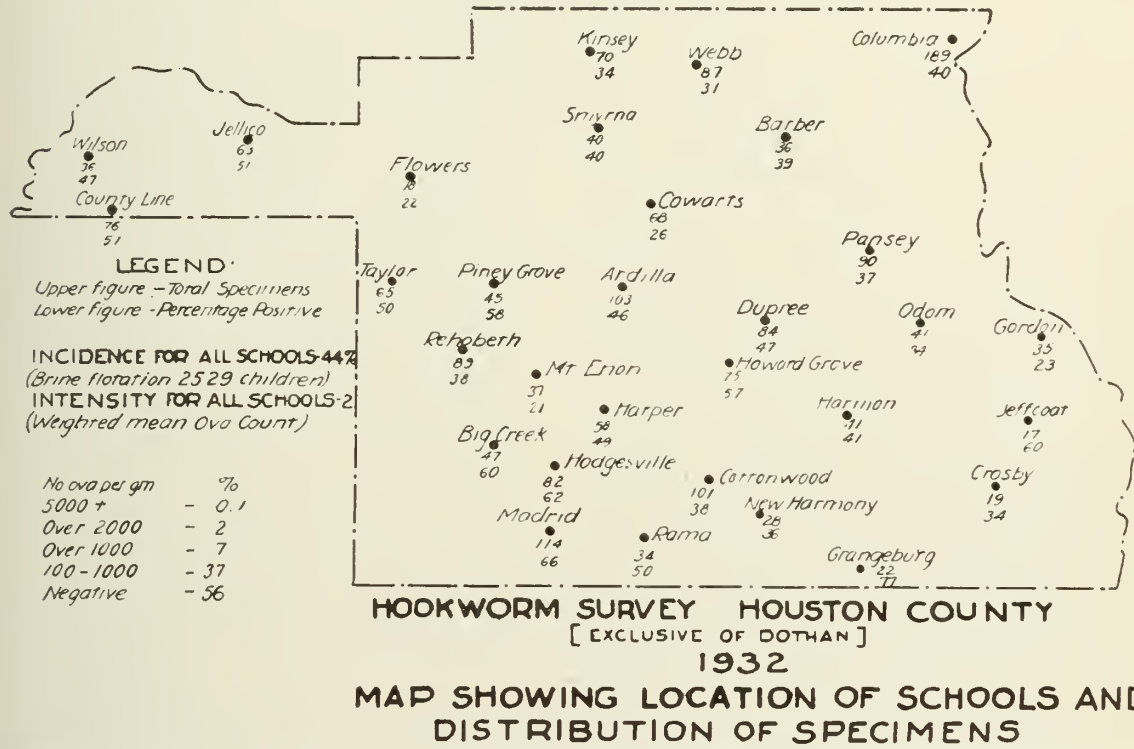
These results in such a short period of time as three years are a tribute to the local full-time health department. The elimination of this terrific handicap to the mental and physical development of the growing children of Houston County is worth infinitely more than the few thousand dollars a year invested in all health work. The same picture holds true, in general terms, for all of our southern counties. Hookworm ceased to be a curse in Mobile and Baldwin Counties several years ago and Covington, Geneva, Escambia and the other heavily infected counties are showing marked improvement.

The results in Houston County have been accomplished almost entirely by mass treatment. Because of financial straits, the improvement in sanitation has been negligible, and is certainly insufficient to account for the progress shown. The objection to reliance upon treatment alone is that reinfection is bound to occur, but it may be

(1) Havens and Castles: J. Prev. Med. 4: 109, 1930.

pointed out that reinfection is slow, requiring a number of years to reach a sufficient worm burden to cause clinical hookworm disease. Treatment, therefore, permits the

present oncoming generation to go through its period of most rapid development, both physical and mental, without the stunting effect of the hookworm.



BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

BISMUTH THERAPY IN SYPHILIS

Since Sazerac and Levaditi in 1922 first introduced bismuth into the realm of anti-syphilitic therapy, the medical profession has been continuously bombarded with new bismuth preparations recommended for the treatment of syphilis. The introduction of so many preparations having such a wide variance in bismuth content, solubility, and doubtless therapeutic efficiency, has created quite a dilemma in the minds of many physicians regarding bismuth therapy. Particularly is this true when it comes to the selection of a preparation for use, as there are to date some two hundred products on the market recommended for the treatment of syphilis, which vary in bismuth content from 4% to 96%, and which contain from an insignificant to a large amount of metal per dose. Greenbaum and Rule, of the Re-

search Institute of Cutaneous Medicine, of Philadelphia, demonstrated also that a great variance existed in the therapeutic value of different bismuth preparations. They tested ten of the most commonly used preparations found on the American market for their therapeutic efficiency on experimental syphilis in rabbits and found the curative dose to be as low as 2 mg. per kilo of body weight with one preparation, while with another preparation the dose required was more than 25 mg. per kilo of body weight. Such a wide variation in the therapeutic value of only ten preparations is astonishing, and is only a sample of what might be expected should the two hundred or more preparations on the market be examined. The practicing physician does not have the time nor the clinical material to test these preparations, and, therefore, must rely too often upon the enthusiastic, but uncontrolled claims of the manufacturer. It would appear, in view of the great variation in the therapeutic efficiency of

the different products, that the physician should demand evidence that the preparation in question had been tested experimentally and found to be therapeutically effective before adopting it in the treatment of syphilis.

In the original works of Levaditi on bismuth therapy, his conclusions, which have become generally accepted, were that the therapeutic efficiency of a preparation was practically entirely dependent upon its bismuth metal content. Although the bismuth content of a preparation is vastly important, there are two other factors which are not to be overlooked in the selection of a drug, namely, the absorption rate and the degree of local tissue reaction. The absorption rate may be found to vary from a few hours with certain of the water soluble preparations to several months with the metallic suspension. In fact, certain metallic suspensions may never be entirely absorbed, as mercury and bismuth have been found encapsulated in the buttocks of patients years after the administration of the drug. It would seem that the therapeutic value of a preparation which is absorbed rapidly and completely would be increased over a preparation requiring months for absorption.

A product may be therapeutically effective, but the local tissue reaction so severe, that it is difficult to keep the patient under treatment for a sufficient length of time to make an impression upon the disease. It is here that the water soluble preparations have a marked advantage, due to their rapid absorption. The pain and soreness is of short duration, and the patient is kept in a better frame of mind for the continuance of treatment. With the salicylates and certain of the metallic suspensions, which are slowly absorbed, there remains a sore painful lump at the point of injection, which does not clear up by the time for the next injection. Patients naturally object to having a needle inserted into an area which is already sore and painful, and for this reason, are apt not to return for treatment. Established preparations of reputable firms should be used, and new preparations should be carefully investigated before replacing standards products.

W. E. W.

BUREAU OF VITAL STATISTICS

W. T. Fales, M. D., Director

RESOLUTIONS FOR THE NEW YEAR

In the Journal for February 1932, nine outstanding facts were given concerning the registration of births in Alabama. Final reports of births for 1932 must come in during January and February to be included in the birth statistics for last year.

Checks made by the Bureau of Vital Statistics during the past year would indicate that between six and eight per cent of the births in Alabama are unreported. This percentage means that approximately 5,000 babies are not registered. Every baby born in Alabama is entitled to have a public record made of its birth.

Physicians, in making birth reports, use one of the following methods:

1. The habit of making an immediate report of every birth. These physicians rarely overlook the reporting of any birth.

2. A careful record of the facts is made at the bedside, usually in the "Pocket Bedside Record" furnished by the Bureau of Vital Statistics. Periodically, the physician fills out the legal certificate of birth and files it with the local registrar. More often the physician waits until the end of the month, and, before he has completely filled in all the certificates, is interrupted. As a consequence, he overlooks the reporting of one or two births each month.

3. A record of the facts is taken at the time of the birth, on any piece of paper that is handy, often a prescription blank, or simply the back of an envelope. Later the paper is misplaced before the physician has an opportunity of making the legal record. Consequently, physicians using this method actually report only about three-fourths of the births they attend.

4. A haphazard procedure, where the physician follows no particular method, reporting irregularly and infrequently, and often only after prompting from the parents or local registrar. Physicians using this method are few. They apparently have little appreciation of the importance of birth records and must be considered criminally negligent in reporting births. In many states such physicians are subject to the revocation of their license.

Which method do you follow?

There has been great improvement in the promptness and regularity of birth reports. Method number two, which is followed by the greatest percentage of physicians, is responsible perhaps for the bulk of our unreported births. There are 1,666 physicians in Alabama and if each physician should have overlooked the reporting of only two births during the year, the number unreported would be 3,332.

In New York State 99.1 per cent of the births are reported within ten days. In Alabama, for the first nine months of 1932, only 73 per cent of the births were reported promptly. Prompt registration is the key-stone of complete reporting and is the solution of our registration problem.

Every physician having obstetrical cases should pledge himself, as a resolution for 1933—

1. To see that all births attended during 1932 are reported. Where possible, physicians are urged to check their obstetrical cases for last year with birth reports recorded by county health department or local registrar.

2. To start 1933 right by making an immediate report of every birth attended.

3. To keep the record clean for the entire year by reporting every birth within ten days.

BUREAU OF CHILD HYGIENE AND PUBLIC HEALTH NURSING

Jessie L. Marriner, Director

AN ADVISORY NURSING SERVICE IN THE
STATE DEPARTMENT OF HEALTH

The purpose of the succeeding series of articles is to follow up "Remembering When" with "now", the "now" to have special reference to the activities of the nurse in public health. The logical approach is through the State Bureau of Public Health Nursing, which has fostered and guided the development of a state-wide county nursing program.

The bureau personnel has been reduced in keeping with the economic trend, and consists of a director, two field workers, and a secretary. The qualifications are professional and academic education, and experience. This includes graduation from a school of nursing, special study in colleges

or universities and practical field experience.

Among the activities of this bureau is that of reference or placement of public health nurses. Applications are received and vacancies filled from those who, after a personal interview, seem best qualified for the work and adapted to the field. Adjustments or changes of placement are frequently desirable. This, too, can best be arranged through the State bureau.

A public health nurse has little difficulty filling her day with worth-while activities, but there is always the question as to whether or not many of the demands made upon the nurse are really public health and therefore functions of the nurse. How can she plan her work to best advantage? These are problems that may require help.

Only 54 counties in Alabama have organized health service. What happens in case of an epidemic in an unorganized county? Here again the Bureau of Nursing is called upon to provide nursing assistance with preventive measures initiated by the Bureau of Preventable Diseases. The advantages of organization for county health work have been seen by unorganized counties. This interest is fostered frequently by civic clubs, women's clubs and parent-teacher associations and is stimulated through school examinations conducted by State Board of Health representatives. The making of such an examination calls for the services of a doctor and a public health nurse. An advisory nurse from the State bureau visits every organized county. It is sometimes asked why this is necessary. An old adage says, "Every tub should stand on its own bottom". But is there anyone who never feels the need of the counsel and advice of one who has the same professional viewpoint? This is true, we contend, for the county nurse whose isolation often results in great loneliness and professional demoralization.

A few of the immediate advantages of an advisory nursing service have been mentioned. What of the more remote, because indirect, but no less valuable advantages to the individual citizen and to the county? Trite, perhaps, but true, no professional worker stands still. It is forward or backward for all of us. The Bureau of Nursing attempts in every way to stimulate academ-

ic and professional advancement for nurse personnel. Conferences, with speakers of prominence, have been held, extension or correspondence courses have been recommended and leaves of absence for study have been granted through the intervention of the bureau.

So, not a small part of the function of the State Bureau of Public Health Nursing is to keep up the morale of county nurses and to enlarge their educational equipment.

F. C. M.

BUREAU OF SANITATION

G. H. Hazlehurst, Director

PROTECTION OF PRIVATE AND SEMI-PUBLIC WATER SUPPLIES

The control and supervision of water supplies serving 50 or more people, in so far as purity, potability, wholesomeness, and physical quality may affect the public health, or comfort, is conferred by legislative enactment upon the State Board of Health. These are normally known as public supplies. Other supplies may be classified either as private or semi-public and may come from shallow wells, deep wells, cisterns or springs.

Water supplies, whether public, semi-public or private, should be derived from the purest source possible. Protection against surface contamination should be next in consideration. Continuous disinfection is a third measure considered in producing a satisfactory public supply where the water is subject to contamination. Such a measure is not often considered as a factor in semi-public or private supplies.

Continuous disinfection of these small supplies is not generally recommended because it is neither practical or economical. Such a supply can generally be obtained from a safe source and protected against surface contamination at a less expense than would be required for disinfecting a suspected source. Disinfection when depended upon becomes an integral part of the system, requiring constant supervision for safety.

There are several methods which may be used for sterilization and disinfection of relatively small quantities of water. Possibly the most generally known method of sterilization is boiling.

The United States Army Medical Corps has found that two drops of iodine (7%) added to a quart of water will destroy all disease germs and render the water safe for drinking purposes in one-half hour. This method is rarely used in civil populations.

Probably the most common method of disinfecting small quantities of water or supplies is the use of chloride of lime. Approximately $\frac{1}{4}$ to 1 ounce is required for each 1,000 gallons of water to be treated.

Chloride of lime is a mechanical mixture of chlorine gas and lime and the product being unstable may contain varying amounts of the sterilizing agent, chlorine. Its use therefore is not entirely safe unless the treated water is tested to determine what amount of chlorine has been added and absorbed by the water. Recently there has been placed on the market a stable compound containing greater proportions of chlorine chemically bound with the lime.

The tediousness and impracticability of applying the above measures and depending upon them for the continued safety of a small supply is evident.

Disinfection or sterilization of semi-public and private supplies is recommended for the purpose of correcting a supply in which the contamination, or the suspected contamination, is of a temporary nature. The purpose is to insure initial cleanliness and a safe supply to begin with. For instance, water from new wells and from wells which have been subjected to changes and repairs to that part of the equipment which is submerged in the wells often show an unsatisfactory sanitary quality as indicated by bacteriologic analysis. This is usually due to contamination from the equipment, material, or water which has been introduced into the well during the making of changes.

Summarizing: Wells, cisterns and springs, used for semi-public or private water supplies, should be derived from the purest source possible; protected as is advised by the Health Department; and sterilized if subject to contamination. Continuous treatment or chlorination of these supplies is rarely resorted to. Such practice has not proven practical nor economical. Location, construction, and initial cleanliness are the most important factors to be considered.

T. H. M.

DO CHILDREN WHO DRINK RAW MILK
THRIVE BETTER THAN CHILDREN
WHO DRINK HEATED MILK?

One of the most perplexing questions confronting American parents, health authorities, and physicians is: Shall milk be heated (pasteurized) for safety before it is consumed?

Most health authorities believe and teach that any milk supply, no matter how carefully produced, is enhanced in safety by heating it sufficiently high (142°-145°) and long (30 minutes) to devitalize any pathogens which might have accidentally found their way into it. On the other hand, there has always been a certain degree of opposition to the use of pasteurized milk. During recent years this opposition has been capitalized by raw milk purveyors, who have advocated the use of "natural milk", and have given much prominence to a report of experiments conducted at Ohio State University, from which the conclusion is drawn that white rats which were fed upon heated milk did not grow as well as those fed upon raw milk. Although the control exercised in these experiments is subject to serious question, "natural milk" advocates have reasoned that it necessarily follows that unpasteurized milk has dietary advantages over pasteurized milk in the feeding of children.

This, of course, is fallacious reasoning. Even if it were true that white rats do not grow as well upon heated milk as upon raw milk—and even if it necessarily followed (which it does not) that children who are fed nothing but heated milk do not grow as well as those fed nothing but raw milk—the fact would still remain that, except for a period of the first few weeks, American children do not live exclusively upon milk. They are given a supplementary diet coincidentally with weaning, and the effect of heating the milk used in the diet, if such effect exists, might be so small as to disappear in the combined effect of the complete diet.

While any health officer desiring to advocate the use of pasteurized milk could point out the fallacy of the conclusions drawn from the rat-feeding experiments, the fact remained that he could not refute these conclusions by actual experimental results on the feeding of groups of children

over correspondingly parallel periods of their lives. Such intensive use of the results of the Ohio study was being made by raw milk dealers in some sections of the country that the need for combative evidence was imperative. Studies of institutional groups of children would have required a period of years. It was decided, therefore, to make an intensive field study on the basis of a survey of several thousand children in all walks of life in various sections of the country. A survey of the ages, weights, heights, and supplementary diets of sufficiently large groups of children fed predominantly raw and heated milk, respectively, should yield, in a brief space of time data comparable to that obtained in a study of institutional groups over a period of years.

A detailed survey form was, accordingly, evolved, and standardized surveys were made in 39 cities in 10 states. (Mobile and Montgomery were two of the cities in which surveys were made.) The children were weighed with outer garments removed, but, with few exceptions undergarments were kept on, because most of the surveys were conducted during cold weather.

A study of the returns soon indicated that the number of children who had received no heated milk whatever was practically negligible. Therefore, it was decided to place in the raw milk consumer category those children who had received raw milk for more than the latter half of their lives, and to group the heated milk consumers on a similar basis. The age-height and age-weight of these two groups of children were then plotted by months and pounds and months and inches, in the following manner: The average height of all the children of one group between 24 and 27 months old was plotted; the average height of those between 27 and 30 months; and so on. Similarly for those of the other group. The age-weight curve was obtained in the same manner.

The facts disclosed by comparisons of the two charts were striking. It was found that there was no significant difference in the average heights of children fed raw milk for more than the latter halves of their lives, and those fed pasteurized milk for this period. The slight differences in the average weights, at all but two ages (62

and 68 months), were in favor of the children fed heated milk. The average weight of the children receiving raw milk was 36.0 pounds, compared with 36.3 pounds of the children fed heated milk.

A detailed study of the returns indicated that neither race, nor financial status of the families affected the results. It was found, however, that the intake of cod liver oil by children fed heated milk was materially greater than that of those receiving raw milk, and that this resulted in a differential of 0.3 pounds in average weight in favor of these children.

The kernel of the study lies in the markedly lower incidence of diphtheria, scarlet fever, dysentery, colitis, and rickets among the group of children fed heated milk. The comparative case rates per thousand children were as follows:

Disease	Raw Milk Drinkers (1762 children)	Heated Milk Drinkers (1875 children)
Diphtheria	22.7	17.1
Scarlet fever	41.4	23.0
Dysentery, flux, colitis.....	196.0	111.0
Rickets	51.1	31.5

The following conclusions are warranted by the study:

(1) There was no significant difference between the average weight of children who have received no milk except heated milk and the average weight of children who have received raw milk for more than the latter half of their lives, the respective weights being 33.6 and 33.2 pounds, the insignificant difference being in favor of the children receiving heated milk.

(2) There was no significant difference between the average height of children who have received no milk except heated milk, and the average height of children who have received raw milk for more than the latter half of their lives, the respective heights being 37.5 and 37.4 inches, the insignificant difference being in favor of the children receiving heated milk.

(3) There was no significant difference between the two groups of children from the standpoint of the relative percentage of life during which various supplementary foods were included in the diet, except in the case of cod liver oil, which was included during the average of 41.6% of the lives of the children receiving heated milk, and an

average of only 27.6% of the lives of the children receiving raw milk.

(4) This difference in the percentage of life during which cod liver oil was fed did not, however, affect the relative positions of the two age-weight curves significantly, since the average weight of the 636 children in the heated milk group who received no cod liver oil at all was 33.5 pounds, as compared with 33.8 pounds for the 794 children in the heated milk group who received cod liver oil during more than half of their lives.

(5) The parents of the children receiving predominantly raw milk reported a higher incidence of diphtheria, scarlet fever, intestinal disturbances, and rickets than did the parents of the children receiving heated milk only.

(6) General conclusion:—The growth-promoting capacity of heated milk plus the supplementary diet received by the average American child of ten months to six years is not measurably less than the growth-promoting capacity of raw milk plus the supplementary diet received by the average American child of ten months to six years.

The foregoing is a digest of a paper by Sanitary Engineer L. C. Frank, *et al.*, Office of Milk Investigations, U. S. P. H. S., printed in Public Health Reports, September 23, 1932, reprints of which are available at the Government Printing Office.

C. A. A.

CURRENT STATISTICS

State Department of Health

*PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA

	1932 November	1932 October	Total Cases to Date This Year	Last Year
Typhoid	29	91	757	920
Typhus	17	48	223	69
Malaria	133	389	2137	2394
Smallpox	2	1	458	293
Measles	14	10	284	9230
Scarlet fever	189	309	1295	1606
Whooping cough	75	48	1423	803
Diphtheria	237	505	1723	1935
Influenza	2206	93	2923	5901
Mumps	58	79	983	1139
Poliomyelitis	2	6	33	46
Encephalitis	3	3	22	43
Chickenpox	62	12	961	1623
Tetanus	9	8	68	46
Tuberculosis	238	351	4123	4764
Pellagra	14	75	690	5535
Meningitis	4	3	59	220
Pneumonia	127	75	2168	3111
Syphilis (private cases) ..	107	168	1908	1457
Chancroid (private cases) ..	0	3	36	67
Gonorrhea (private cases) ..	89	150	1271	1530
Ophthalmia neonatorum	2	0	18	13
Trachoma	0	0	2	2
Tularemia	0	0	28	5
Undulant fever	1	0	17	16
Dengue	0	0	3	2
Rabies	1	0	1	2

*As reported by physicians and including deaths not reported as cases.

PROVISIONAL MORTALITY STATISTICS
Alabama, October 1932

	Number of Deaths Registered October 1932			Annual Rate per 100,000 Population		
	White	Colored	Total	Oct. 1932	Oct. 1931	Oct. 1930
ALL CAUSES	1206	964	2170	944.8	944.7	996.9
Typhoid fever	4	4	8	3.5	10.9	11.5
Smallpox						
Measles					0.4	0.9
Scarlet fever	4		4	1.7	1.3	1.3
Whooping cough	3	4	7	3.0	2.6	4.4
Diphtheria	26	6	32	13.9	16.2	15.5
Influenza	26	13	39	17.0	4.4	11.9
Pneumonia, all forms	50	48	98	42.7	42.9	48.2
Poliomyelitis	2		2	0.9	2.2	0.4
Tetanus	5	1	6	2.6	0.4	0.9
Tuberculosis, all forms	43	106	149	64.9	81.4	72.1
Tuberculosis, pulmonary	42	103	145	63.1	72.2	62.4
Malaria	11	14	25	10.9	14.9	23.9
Cancer, all forms	110	29	139	60.5	51.6	45.6
Diabetes mellitus	15	11	26	11.3	10.9	10.2
Pellagra	14	21	35	15.2	12.3	19.5
Cerebral hemorrhage, apoplexy	83	60	143	62.3	60.4	62.4
Diseases of heart	168	143	311	135.4	96.7	121.7
Diarrhea and enteritis						
Under 2 years	27	11	38	16.5	19.7	36.7
2 years and over	12	5	17	7.4	6.1	8.8
Nephritis	110	70	180	78.4	80.5	81.0
Puerperal state, total	17	8	25	10.9	16.2	19.9
Puerperal septicemia	2	3	5	2.2	5.2	5.7
Congenital malformations	7	1	8	3.5	7.0	7.1
Congenital debility and other diseases of early infancy	67	45	112	48.8	47.3	51.3
Senility	17	19	36	15.7	15.8	13.3
Suicides	12	2	14	6.1	5.2	8.0
Homicides	19	31	50	21.8	29.3	18.6
Accidental burns	3	9	12	5.2	4.4	4.4
Accidental drownings	4	3	7	3.0	3.5	1.3
Accidental traumatism by firearms	7	4	11	4.8	3.5	1.8
Mine accidents					1.3	3.5
Railroad accidents	5	6	11	4.8	2.2	3.5
Automobile accidents	28	16	44	19.1	17.1	26.6
Other external causes	29	14	43	18.8	18.4	16.8
Other specified causes	260	129	329	143.2	151.9	144.7
Ill-defined and unknown causes	78	131	209	91.0	105.5	98.7

Medical News

(Secretaries of county medical societies and other physicians will confer a favor by sending for this section of the Journal items of news relating to society activities.)

Dr. Richard C. Bunting, Memphis, directs the attention of the profession in Alabama to the 49th Annual Meeting of the Mid-South Post-Graduate Medical Assembly to be held in that city at Hotel Peabody, February 14-17, 1933. Among those to contribute to the program will be Dr. Isidore Cohn, New Orleans; Dr. W. Wayne Babcock, Philadelphia; Dr. Duane M. Carr, Ann Arbor; Dr. Clarence M. Grigsby, Dallas; Dr. Logan Clendening, Kansas City; Dr. Lawrason Brown, Saranac Lake; Dr. Thos. R. Brown, Baltimore; Dr. Jos. Leggett Miller, Chicago; Dr. Russell Cecil, New York; Dr. Frank H. Lahey, Boston; Dr. Chas. G. Kerley, New York; Dr. J. A. Kolmer, Philadelphia; Dr. Wm. P. Graves,

Boston; Dr. Jos. L. Baer, Chicago; Dr. Jos. C. Beck, Chicago; and Col. Chas. F. Craig, New Orleans.

* * *

The following officers have been elected for 1933 by the Colbert County Medical Society:

President—Dr. J. P. Long, Sheffield.

Vice-President—Dr. R. D. Wright, Leighton.

Secretary-Treasurer—Dr. W. T. Burkett, Tuscumbia.

Dr. W. M. Pierce, Tuscumbia, was chosen a member of the County Board of Censors.

* * *

At a meeting of the Morgan County Medical Society held December 1, the following were elected to serve as officers during 1933:

Dr. W. H. Anderson, Decatur, President.

Dr. Frank Emens, Trinity, Vice-President.

Dr. E. R. Emens, Decatur, Secretary-Treasurer.

Dr. F. L. Chenault, Decatur, was re-elected a member of the County Board of Censors.

Drs. W. L. Dinsmore and G. R. Sullivan were transferred from the roll of active members to that of honorary life members.

Dr. A. J. Perolio continues as an honorary member of the Society.

* * *

The Lawrence County Medical Society, in regular session December 6, elected the following officers:

President—Dr. J. K. Clarke, Courtland.

Vice-President—Dr. J. W. Fennell, Mt. Hope.

Secretary-Treasurer—Dr. R. E. Harper, Moulton.

The Board of Censors is composed of Dr. J. P. Dyar, Moulton, Chairman; Dr. R. P. Irwin, Moulton; Dr. J. A. Ussery, Courtland; W. R. Taylor, Town Creek; and H. C. McCullough, Town Creek.

* * *

Dr. J. L. Perdue, Greenville, died December 17.

* * *

Dr. Armistead L. Hayes, Notasulga, died at his home December 14.

Dr. W. C. Hatchett, County Health Officer, Huntsville, has been elected President of the Madison County Medical Society. Officers chosen to serve with him are Dr. M. M. Duncan, Vice-President, and Dr. T. E. Dilworth, Secretary-Treasurer.

Dr. M. R. Moorman was re-elected to serve on the County Board of Censors.

* * *

Dr. Robert Parker has been elected President, Dr. Haywood Bartlett, Vice-President, Dr. J. L. Bowman, Secretary, and Dr. F. C. Stevenson, Treasurer, of the Montgomery County Medical Society.

* * *

Dr. T. H. Sewell, Tarrant, died December 5.

* * *

Dr. J. P. Chapman has established his office in Selma.

Book Abstracts and Reviews

Stenographic Reports of the Clinics of John F. Erdmann. M. D., F. A. C. S., Professor of Surgery in Columbia University; Executive Officer in the Department of Surgery, New York Post-Graduate Medical School; Director of the Department of Surgery, New York Post-Graduate Hospital. Edited by J. William Hinton, M. D., F. A. C. S., Associate Professor of Surgery, New York Post-Graduate Medical School (Columbia University); Associate Visiting Surgeon to Bellevue Hospital, New York City. 315 pages with 39 illustrations. Philadelphia and London: W. B. Saunders Company, 1932. Cloth, \$4.50 net.

Doctor Erdmann's dynamic personality is present on every page of this remarkable book telling us through shorthand reports what he tells the students at the New York Post-Graduate Medical School. A number of the selections supplement the actual operative clinics and we are the losers for not being in the amphitheatre at the time, seeing the operation in question actually performed by this extremely clever, skilful and rapid operator.

The book is individualistic, no particular effort being made to correlate the existing literature with the subject of the moment. However, Doctor Erdmann has had a very wide, extensive and successful experience in surgery extending over a period of 40 years and any work which had been drawn from that experience has valuable lessons for the rest of us.

The book does not attempt to cover the field of surgery but the list of subjects included is very extensive. Preoperative and postoperative treatment is discussed very briefly, mention being made of some details which Doctor Erdmann considers to be of prime importance. Postoperative complications are also lightly touched on.

The remaining portion of the book covers a variety of subjects—appendicitis; differential diagnosis of pancreatic disorders; gallbladder and duct surgery; surgery of the stomach including the operative treatment of cardiospasm; surgery of the small intestine, colon, rectum and mesentery; renal calculi; tumors of the bladder; patent urachus; imperforate hymen; ovarian cysts and intraliga-

mentous fibroids. The last selection includes hernias, breast surgery, tumors of the larynx, cervical lymphadenitis, a method of reducing dislocations of the thumb and a case of stab wound of the heart.

Mention of these various subjects is made merely in an effort to demonstrate the scope of the work. In no instance does Doctor Erdmann attempt to cover extensively the subject under consideration but throughout the book one comes upon practical points in diagnosis and operative technique which have been of value to the author. Some of the chapters deal with rare and unusual cases. Others are illustrative of general subjects.

The greatest portion of the book deals with abdominal surgery and here is its chief value. Here also we lose a tremendous amount of information by not being present because Doctor Erdmann appears at his best as a skilful operator when dealing with tumors of the colon and rectum and with gallbladder surgery.

There is a very informative chapter on "Hemorrhoids and Their Treatment". It is interesting to note that Doctor Erdmann is decidedly not a convert to the injection treatment.

There are about 40 illustrations, some of them very valuable, particularly those dealing with the operative technique in cases under discussion.

The profession may well hope that this volume will merely be an introduction to a much more extensive and complete work dealing with the experience of Doctor Erdmann.

J. L. B.

Clinical Gynecology: By C. Jeff Miller, M. D., Professor of Gynecology, Tulane University School of Medicine; Chief of the Department of Gynecology of Touro Infirmary; Senior Visiting Surgeon, Charity Hospital, New Orleans. Illustrated. 560 pages. C. V. Mosby Company, St. Louis, Mo. \$10.00 net.

This book, for the greater part, deals with the treatment of gynecologic diseases and is intended for the student and general practitioner but is equally well suited for the specialist. Practically every organic disease of the female reproductive tract is included in this book—its symptoms and diagnosis in brief, its treatment in detail. It seems strange that so few authors have included in their text books of gynecology any scientific discussion of such functional diseases as sterility and sexual non-adjustment.

Doctor Miller has conservatism that comes with long experience. In the treatment of the inflammatory diseases of the adnexa he recommends that operation be deferred until temperature has been normal for two or three weeks. The operative treatment for the repair of obstetric injuries is well written and equally well illustrated. In the treatment of malpositions of the uterus prophylactic measures and surgery are stressed. There is an excellent chapter on female endocrinology and the treatment of sterility.

The smoothly flowing style, the beautifully written sentences, and the wise selection of words are characteristic of all Doctor Miller's speeches, papers and books. When a book has been written by a man who possesses a keen mind, a vast clinical experience, and unusual ability to express himself well it must of necessity be a pleasure and profitable volume to any one interested in the subject.

E. A. T.

Miscellany

SOCIAL INSURANCE

*Abstract of articles on the subject by
Dr. Edward H. Ochsner*

The chief reason for England's present difficulties is the terrific burden of taxation which she has to carry. One writer says: "A complete understanding of the problems confronting England at the present time involves going back to 1909 when we had just adopted old age pensions and destroyed the foundations of thrift." In 1911 England introduced national insurance when three per cent of its workers were unemployed. After twenty years of operation of the act, seventeen per cent of her workers are out of work. As a partial explanation for this condition let us cite just one example from among scores and hundreds that could be given. A manufacturer found that his orders were only sufficient to give work to all his employees four days a week so he called his workers together and told them the facts. The workers, however, insisted that they would work only three days a week in order that they could draw the dole for the other three days. An English writer commenting on this says: "It is a great mistake to worry about the much discussed abuses of the system. It is the system which is fundamentally wrong and abuse is inseparable from it."

A recent newspaper article contained the statement that there are more than one hundred and fifty federal boards and commissions in Washington each with three or more members drawing salaries and each with a bevy of clerks most of them just drawing salaries.

Already the number of payrollers has become so large and so politically active and influential that they yield great power in both political parties. If we then add compulsory health insurance we will add further thousands to the lists of our civil employees. Those who are not in government employ will be powerless to control government and their only function will be to pay the taxes which others impose upon them. Instead of increasing the number of government officials and employees, the ideal to be constantly kept in mind and striven for in this country is to permit the private citizen

to perform all those functions that he can best perform and that make for independence, self-reliance, and strength of character and to have the government do only those things which the individual cannot do satisfactorily. We maintain that centralization in government and paternalism have already gone much too far and that social insurance would simply be another step in the wrong direction.

In most countries which have social insurance such laws were first suggested and urged by welfarers, uplifters, and visionaries who unwittingly played into the hands of practical politicians. Even now few seem to realize that bureaucracy in a republic may become just as unreasonable, oppressive, and ruthless as a despotism.

The medical and dental professions of this country are giving the American public the best all-round health services ever enjoyed by any nation and are on the whole serving the nation as well or better than any other group of men. These two professions have a very general and most intimate contact with the citizens of the nation. No other professions are in so favorable a position to exert influence for good as are these two if they will but use their opportunity rightly and wisely. If they are to accomplish the greatest possible good they must make still closer contacts with and exert still greater influence as a whole and as individuals must strive unceasingly and untiringly, in the future as in the past for still further improvements in their respective fields. If unhampered by lay bureaucratic supervision and control in the future as they have on the whole been in the past we have every assurance that they will proceed to new and greater achievements; if, on the contrary, unduly hampered, we have every reason to expect medical service to deteriorate and medical progress to cease as it has already done in those countries whose governments have interfered the most.

In order to maintain the high standard of medical services prevailing, the professions must insist that the governments of the various states maintain high standards of requirements for admission to the practice of the professions. In order to accomplish this, continued education of the public in this regard is necessary.

The organized professions through their proper local organizations must see to it that all undesirables are weeded out and that the individual members render efficient service for adequate and yet reasonable fees.

Having presented to the attention of my readers through these articles the defects of social insurance as practiced at present in foreign countries and also having shown the dangers of such a system if allowed to become fixed upon the American citizen, I offer as counter-suggestions that the government instead of wanting to take over new functions and new powers would do better were it to make every effort to perform acceptably the duties with which it now is entrusted.

The allied professions in conjunction with the government should give more serious attention to the teaching of personal hygiene in our schools, colleges and universities.

Better provisions for safeguarding the savings of our workers should be made and if there is no way of accomplishing this, there should be established a compulsory government insurance against sickness whereby the individual worker pays for his own insurance, in other words, separate entirely medical services and cash benefits. The physician should under no circumstances be medical advisor and insurance adjuster as he is in fact in all systems of compulsory health insurance now in vogue.

Finally, devise means and methods whereby remuneration and reward shall be in direct proportion to time and energy legitimately expended and to the value of services rendered to society.

This formula will require the best brains of the country for its practical application, but I am firmly convinced that it is the only formula that offers a practical solution to our social and economic ills not only of the allied professions but of society in general. If it is followed those members of society who are doing the world's work will have enough money to employ capable dentists and physicians of their own choice and will then be assured adequate health service.

A common error held particularly by the reformers and intelligentsia is that statisticians and economists can solve this problem

unaided. Desirable, valuable and even necessary to a complete understanding of the problem as a study by competent economists is, there is one very important fact which many who have made a study of the problem do not seem to be able to realize, namely, that in a matter where personal relation is such an important element as in the practice of medicine and dentistry the ordinary formulae employed by economists do not and cannot apply. Personal relations cannot be measured by any mathematical formula devised. It is too elusive a factor to be measured by monetary or any other standards and yet of all the factors it is by all odds the most important. Only the individual who has had an extensive experience in the practice of medicine or dentistry or the one who has had a long and serious illness seems to be able to evaluate properly this phase of the problem. Then again the lack of medical knowledge by economists makes it impossible for them to appraise the difference between the personal individual care of the patient by the private physician and the more or less impersonal mechanical care of the panel or *Kranken-kasse* physician nor are they so situated as to have access to individual patients and even if they had, they lack the training to know which is giving the better treatment. From the foregoing it must be evident that this type of study and investigation has its limitations in cases where the personal element enters intimately with a social or economic problem and if too much dependence is put upon it wrong conclusions are bound to be reached or to restate this point a little more concisely let us say that statistics have their value and their limitations. The more personal the matters under investigation the less their value and the greater their limitations. One writer has expressed this idea very well in the following words: "There is real danger that the economist lost in the abundance of his researches finally overlooks the plain and easy road that lies directly before him."

It is the belief of some that social insurance will abolish poverty. To the contrary, it is at best only a palliative and like all palliatives if employed for any considerable period of time always leaves conditions worse than when first employed.

It is also an error quite generally made by the more sensitive and emotional to believe that the receiving of charity is of all things possible the most degrading. Serious as the accepting of charity is to the character of the intelligent and sensitive, there are many other things even worse and one of these is the quite general practice of malingering which compulsory health insurance and the dole encourage and foster among the workers of a nation. There is this fundamental and very important difference between accepting charity and a health insurance stipend—the former is still considered somewhat of a disgrace while to get the latter, even through subterfuge is considered highly respectable and clever.

There are two questions that the compulsory health insurance proponents have never answered in spite of the fact that they have offered innumerable alibi that do "not alibi" and endless explanations that do not explain. First, why if compulsory health insurance improves the health of a nation as claimed by its proponents is the death rate no lower in those countries that enjoy this "great blessing" than in those countries not so blessed? And, second, why shortly after and since the introduction of compulsory health insurance have the number of days lost by the workers per annum steadily increased? The answer to the first question is that it does not improve the general health of the people and the answer to the second is that among a very large per cent of the working population it substitutes for *the will to get well and the will to work, the will to stay sick and the will to loaf*.

Human progress in most lines has always been very largely the result of unhampered personal endeavor and rarely if ever the result of governmental action primarily. Will we never be able to learn from experience and must there always be recurrent periods of halt and even retrogression in human progress?

* * *

PERIODIC HEALTH EXAMINATIONS IN PRIVATE PRACTICE

When a man begins to see his money slipping away from him he is apt to get somewhat alarmed. If he has already done everything he can think of to stem the tide

without particular success he usually seeks advice from others in whom he reposes confidence.

A very similar attitude prevails concerning health. Interest in keeping up bodily vigor and strength seems to grow as the years after the thirtieth birthday pass. The greatest volume of interest is shown by those between 30 and 50. After the half century mark is reached most people apparently decide either that their health is good enough for their age or else that little or nothing can be done about anything except acute conditions.

This was the experience of Dr. F. A. Faught of Philadelphia who examined 500 individuals whose interests were primarily preventive in character and who sought medical advice more as a precaution against future trouble than as a means of correcting immediate intolerable conditions.

In this series constipation was by far the most frequent defect observed, one in each three suffering from this trouble. Then came indigestion, with one in four complaining of that trouble. About one in six was nervous and about the same ratio tired easily and suffered from frequent headaches. Dizziness, insomnia, pain in back, joint pains, palpitation, frequent colds and difficulty with breathing were in the order named the next most frequently observed defects and affected from one in eight to one in ten of those examined.

About 22 per cent of the 500 returned after 8 to 55 months for re-examination and a high degree of improvement was observed. One outstanding and somewhat unexpected result was a marked decrease in high blood pressure in a number of the examinees. This favorable development resulted from the correction of such defects as diseased tonsils and decayed teeth.

Insufficient exercise was the detrimental habit found with the greatest frequency in this group. One in five was guilty of this shortcoming. Careless habits of diet come next with one in eight confessing to this important cause of ill health. One in thirteen slept less than 6 in 24 hours. One in twenty drank too little water. One in five of the males used tobacco to excess. Only one in thirty-three worked too many hours per day while one in twenty used coffee or tea to excess.—*Illinois Health Messenger*.

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THE JOURNAL

OF

The Medical Association of The State of Alabama

Published Under the Auspices of the Board of Censors

Vol. 2, No. 8

Montgomery, Alabama

February 1933

SOME OF THE PROBLEMS CONFRONTING ORGANIZED MEDICINE IN ALABAMA*

S. KIRKPATRICK, M. D.

Selma

President of the Medical Association of the State of Alabama

In the Guild of London above the doorway facing the Alderman, so that no judicial eye can fail to see it, is to be seen the following inscription: "*Audi Alteram Partem*". "Hear the other side", or more freely, "what has the other fellow to say?" There has never been a time in human history when it was more important that intelligent people should keep their minds widely open and should exert themselves to determine just what the other man is really thinking of and what is to be said on his side. Doubt not that the minds of people of all classes and in every walk of life are more active than ever before in the history of man. The working man, in particular, is baffled and bewildered. All his life he has been told that if he only would work harder and produce more, all his problems will be solved. He has worked hard and he has produced more and suddenly he discovers that by this very course of action he has not solved his problems; on the contrary, a social situation has been created in which industry has become prostrate and financial leadership bankrupt.

People are thinking today as they have never thought before. In a monarchy one man does the thinking for all, but in a democratic form of government like ours every man thinks for himself and there are no leaders. It was the condition of the common man that caused the French Revolution; it was the plight of the common man that caused the downfall of the Romanoffs and the establishment of the Bolshevik gov-

ernment in Russia. Nor is all well with the common man in the United States today. He is lean and hungry, beginning to think, and, like Cassius, is potentially dangerous. The public has little confidence in either political party, the standard of politicians is exploitation of the people, and statesmanship has given place to a degenerated type of personal politician.

In the last twelve years the whole world has been shaken and its boundaries, as well as its habits and programs, have changed. Nation after nation has gone into the turmoil of strife and upheaval. Staid civilizations have been shattered and long established governments have crumbled. The pomp and splendor of royal lines went to the wall in Germany, and it is not yet certain what will come of this witches' brew. Spain ejected her royal line, took over what they left behind, and took over the government for the people. England quivers constantly under the strain of her adjustment and furnishes the world with the strange mixture of a king on a throne and a labor party running the government. Italy found herself unable to run with a king and a dictator arose whose word is law and whose hand is iron. France when she goes to bed at night does not know what her government will be in the morning. Old established customs and usages are rapidly changing or becoming obsolete. Will medicine as practiced in its present form continue? It appears not. Medicine must adjust itself to changing modes. With insistent demands from the poor for medical care commensurate with that of the rich, and the rapidly increasing numbers of indigent patients; lay institutions; endowment institutions practicing medicine; big hospitals springing up all over the country with group medicine and diagnostic clinics, the old order is changing.

It is beginning to dawn upon the consciousness of the people that one country

*Read at a meeting of the Northeastern Division of the Association, Anniston, October 25, 1932.

cannot prosper if another section is starving; that the whole is interdependent in its social and economic life to its several parts. So is our problem correlated to and influenced by the distress of organic business as a whole. We must not lose sight of this fact in trying to solve the many problems confronting the medical profession. Perhaps we have grown to be a little chesty over the progress we have made in medical science, and we certainly have a right to be proud of the quality of service we are now giving the people. But, if you think we are giving 100 per cent satisfaction, ask the average citizen of the streets what he thinks of us and he will tell you that he considers us commercial, avaricious and unsympathetic. Evidently, we are losing the human touch, that subtle thing that is more satisfying than skill. There is a mental and physical revolution going on in the world today. Doubt not that medicine must adjust itself to these changing conditions.

Our State Health Officer, Dr. Baker, makes the following very pertinent observation: "Any readjustment in medicine, to be successful, must spring spontaneously from within rather than be forced from without. Not merely the preservation and development of the profession of medicine depend on the success of this readjustment but, to a greater extent than one is wont to realize, the preservation and development of the human race depend on it.

"It is precisely because medicine is the father of philanthropy and the *sine qua non* of social uplift that every new experiment in government, social economy or social betterment, seeks to absorb medicine and to make of it a tool in the prosecution of its enterprises. Organized medicine has met disease in open combat and won decisive victories over it; now it must develop and control statesmanship, as well as its cunning cousin, political intrigue, in order to meet these human forces on equal terms."

What are some of the things that are seeking to make of medicine a tool? I have selected the following as illustrative:

(a) State, industrial, insurance and socialistic medicine

(b) Veterans' relief

(c) Insurance companies

(d) Medicolegal processes

(e) Damage suits

(f) Charity

(g) Politics

It would take volumes to discuss the merits and demerits of each item; besides, this is not the purpose of this paper. It is my idea to flash on the yellow light which is, as you know, the caution signal on the highway of life.

(a) State, Industrial, Insurance and Socialistic Medicine: These I interpret as socialism in its final analysis. It is not local but world-wide and rushing on us like an incoming tide which cannot be brushed back with the broom of objection. It invades every walk of life. In America the rich are being socialized by the Reconstruction Finance Corporation which was created for the rich and powerful; the poor are being placated with a dole under the guise of specious legislation in the form of various relief appropriations, and medicine is caught in the vortex. We must accept these conditions as facts and protect our interests by organization, as did labor; dictate the terms under which we will cooperate and not permit them to process us. True, we have an organization, but doctors are not organized. They are individualistic by education and training and we must have an organization of individualism which will spell for greater efficiency. Edward A. Filene, Boston merchant and philanthropist, says, "With an A-1 product to sell—health—it seems to me that the lack of doctors' 'sales' can show only one thing: lack of organization within the medical industry."

(b) Veterans' Relief: "Veterans' relief will absorb the income tax, and more, this fiscal year. Last year's bill was \$1,000,000,000. One out of every six men who served with the army in the World War is now receiving benefits. And speaking broadly, the mounting expense is due, not to the money going to the dependents of those killed in the War, or to those wounded in the War, or those mentally or physically incapacitated in the War, but to those who have been added outside of the zone which encompasses such cases." The World War veteran has no greater friend than the doctor. Many of us were in the trenches with him and realize that our government owes him a debt that can never be paid in dollars and cents, but there are abuses going on in veterans' relief to which the doc-

tor cannot conscientiously lend himself. We are all besieged by men, who are not entitled to these benefits, to be a party to parasitism which increases the tax burden of the common man. The medical profession is heartily in sympathy with the efforts of the administration to curtail expenses of the government but feel that we have been discriminated against in many respects. An example is the building of expensive hospitals for veterans all over the country with an expenditure of billions of dollars while well equipped, first class hospitals, unfilled from the depression, are lying idle. These hospitals could have been used and the personnel of the staff, being familiar with local conditions, could have served the purpose better, thus distributing this vast sum of money where it would have been most needed and would have done most good. What are they going to do with these big hospitals in the coming years? You and I know that it is but another step towards State Medicine.

(c) Insurance Companies: For many years we have been rendering them an invaluable service at their price. They require of us an examination of an applicant for which a first class lawyer would charge twenty-five dollars. No doctor can afford to make an examination, such as he would be willing to stand behind, for less than that. I think the minimum fee should be five dollars, graded upward, commensurate with the face value of the policy and the exactness of the requirement of the company. We are frequently called upon for information regarding the condition of a patient seeking accident or health benefits. It has occurred to me that in giving this information free, as we usually do, that we are violating a professional trust between doctor and patient and rendering a gratuitous service to a rich corporation whose purpose frequently is to obtain information that will defeat the applicant's compensation.

(d) Medicolegal Processes: Doctors are frequently called upon to give expert testimony for which no compensation is provided, incurring loss of time and, may I say, dignity, for it is a notorious fact that lawyers frequently try to make fools of doctors on the witness stand. We should protect our interests here.

(e) Damage Suits: The Journal of the American Medical Association is my authority for the statement that one doctor out of every twenty in New York City has been sued for malpractice. Of course, all plaintiffs did not recover damages. Until recently the South has been comparatively free of this humiliating condition, but with the automobile comes an epidemic of lawsuits for practically everything and doctors will not be exempt. The practice of medicine is attended by so many hazards that it is beyond the power of a surgeon to be so perfect as to make it impossible for the unscrupulous patient to find an excuse for a law suit. I, therefore, warn you to be more careful in your criticisms of the other man's work, for it is frequently the thoughtless remark of a confrere that lights the torch. In protecting your fellow doctor you indirectly protect yourself.

(f) Charity: "Why physicians practice charity toward those unfortunate people who belong to the whole community is beyond the understanding of anyone but the doctor who has been accustomed to it, and the people who take it for granted", states Dr. Ray Lyman Wilbur, Secretary of the Interior. The explanation is, of course, that there exists within society today no other group sufficiently trained to render such service. Every business and profession functioning within our present economic order must expect to forego a percentage of the financial benefits accruing to it, if the wheels of progress are to continue to revolve. The medical profession is no exception. It must shoulder its entire responsibilities whether paid always for doing so or not. Historically, the doctor in his private practice performed whatever charity work was necessary. This he still does, but to a smaller extent. Gradually, charity service is becoming institutionalized in a variety of welfare agencies not controlled by the doctor. Annual budgets of welfare organizations do not ordinarily anticipate any expenditures for professional service. Whether this constitutes fair practice or not, no physician would object if all patients so treated were definitely charity cases. But they are not, and that is where the discrepancy looms large. An exhibition of some backbone by the medical profession is absolutely essential if we are

to control the activities of agencies that give free medical service. If we fail to do this we may fully expect a continuance of charity abuse.

To the above I wish to add one more thought, namely, the exploitation of medicine by the manufacturers of proprietary medicine who are using us as a medium of distribution of their wares to the public.

(g) Politics: There is no escaping politics. It has a bearing on almost every human interest; and scientific medicine is too important to be ignored. Every one of the above mentioned items is dependent upon scientific medicine; they cannot function without it. A doctor may not be interested in politics, but politics is interested in him. The rule holds that a man must govern his house or be governed. The answer to the politician is the ballot. There are approximately two thousand doctors in Alabama with a potential voting strength of many times that number. Discover the attitude of all candidates towards problems besetting humanity with which the physician must cope in every day of his life. Decide upon the man who can best serve the purpose of the ideals of organized, scientific, self-sacrificing medicine, and let your ballot do the rest.

We ask no special favors for doctors, but believe in a single standard of education and a thorough professional training before a man or woman can be licensed to practice the healing art or to diagnose disease. There should be no side-door shortcuts to the practice of the treatment of disease in this State.

Organized medicine and public health hold within their grasp every essential for the successful readjustment of their affairs to the betterment of service to mankind and the elevation of the human race. But, we cannot do it alone.

"Stand off by yourself in your dreaming,
And all of your dreams are vain;
No grandeur of soul or spirit
Can man by himself attain.
It is willed we shall dwell as brothers;
As brothers then we must toil;
We must act with a common purpose
As we work in a common soil.
And each who would see accomplished
The dreams that he's proud to own
Must strive for the goal with his fellows,
For no man can do it alone."

CONGENITAL HYPERTROPHIC PYLORIC STENOSIS*

WILLIAM R. MEEKER, M. D., F. A. C. S.

Mobile

Many examples of greatly improved surgical results could be cited due to close cooperation among the surgical team, the internist and other clinical specialists with their laboratory facilities, all constituting one closely allied working unit. The prognosis in congenital pyloric stenosis has thus been greatly improved due to accurate diagnosis and adequate preoperative care by the pediatrician, perfected and standardized surgical technic, wisdom in the choice of the anesthetic and efficient postoperative pediatric care. The lives of many infants have thus been unquestionably saved which formerly would have been lost under rather vague diagnoses such as marasmus, athrepsia and inanition.

This condition constitutes a definite clinical entity with quite constant pathologic changes in the pylorus. The pylorus is elongated, greatly thickened, being often as hard as cartilage, and projects into the duodenum like a cervix uteri. Ordinarily the diameter is greater at the center than at the extremities and the mass is more fusiform or olive-shaped than cylindrical. It has been compared to a medium-sized olive both in size and consistence. The color of the tumor is at all times paler than the adjacent stomach and duodenum.

On section the orifice is seen to be greatly diminished in diameter. Complete closure is not observed, but the lumen may be so narrowed as to admit only a probe. The walls of the pylorus are markedly thickened (Fig. 1), caused by hyperplasia of the circular muscle layer. This layer may reach three times the normal thickness. The submucosa is often edematous and there is a redundancy of the mucous membrane layer. The overlying peritoneum is smooth and glistening, and the tumor is freely movable. As a secondary change the walls of the stomach may be somewhat hypertrophied and the cavity may be dilated. These features vary according to duration and degree of obstruction, conse-

*Read before the Association in annual session, Mobile, April 21, 1932.

quently such changes are more evident in the later stages.

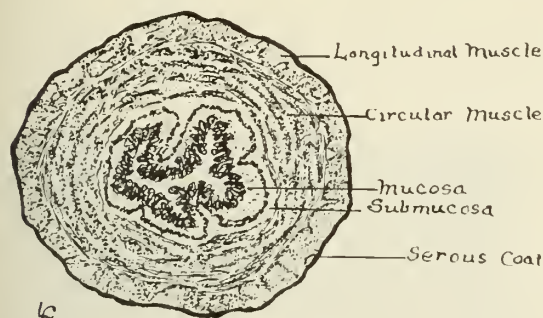


Fig. 1. Cross section of pylorus in congenital hypertrophic stenosis showing hypertrophy of longitudinal and circular coats. (Semi-diagrammatic.)

The etiology has given rise to considerable speculation and is still a debated question. The view of pathogenesis most widely accepted is that there are two factors present: (1) hypertrophic, an abnormal development of the pylorus, especially the circular muscle fibers, a congenital condition; and (2) spasmodic, consisting of contraction of these increased fibers. These two elements are associated in varying degrees. In some cases the hypertrophic and in others the spasmodic predominates. That the hypertrophic pylorus is a congenital condition is supported by the fact that the condition had been found in premature fetuses and in several instances within a few days or hours after birth, so that hypertrophy precedes spasm in all cases. It is probably not until spasm had been added that symptoms appear. Symptoms are usually delayed for a few weeks, the motor power of the stomach being sufficient for a time to force the food through the narrowed orifice. The added spasm may be at this time insignificant. After the stomach loses its reserve power, however, signs of insufficiency present themselves. Recovery may still take place by the stomach regaining its compensation and the pylorus losing its spasmodic contraction. Successful results without operation are thus observed, even when typical symptoms are present.

The diagnosis of this condition is based upon the signs and symptoms of projectile vomiting, visible peristalsis, palpable pyloric tumor, loss of weight, emaciation and scanty stools, during the first few weeks

of infant life. It is stated that a palpable pyloric tumor and gastric peristaltic waves in combination occur in no other condition. In many cases a tumor can be felt just above the umbilicus and to the right. There is considerable disagreement among authorities as to the exact percentage of cases in which the tumor can be felt, and its significance. Bolling states that when palpation is properly performed the pyloric tumor can be palpated in every case, and considers it the most important finding. On the other hand Strauss states that he has felt it in only 25 per cent of his cases and attaches no significance to it. Ladd maintains that the tumor can usually be felt if a painstaking examination is made at the proper moment. The fact that it can be felt more easily at one moment than another is due to its position, or to such conditions as relaxation of the abdominal muscles and the amount of distention of the stomach. In our very small series of six operated cases we were able to identify the pyloric tumor only twice. A pyloric tumor was also thought to be palpated in a seventh infant in whom at operation no pyloric stenosis was found to be present. We do not, therefore, attach great significance to a diagnostic sign so difficult to elicit.

The question of the diagnostic value of an x-ray examination is often discussed. Some authorities state that it is of no value in diagnosis. Others object to giving barium just before operation because it makes the stomach difficult to deliver, with danger of tearing the peritoneum; also because of the possibility of choking the infant with regurgitated barium. We fail to appreciate such dangers and have relied upon fluoroscopic examination in all cases and have followed soon after with the operation. By the introduction of a catheter through the nose barium can be easily introduced into the stomach and examination continued at intervals over a period of fifteen to thirty minutes. Some reliance can be placed on the blunt rounded pyloric end of the stomach (Fig. 2), as well as the amount of barium passing out of it. Notwithstanding the accentuated peristaltic tone that is present in stenosis, very little or none of the opaque meal is forced through the pyloric antrum during this period of study (Fig. 3). When examination is completed the

barium is withdrawn by means of a syringe, the stomach washed with sodium bicarbonate solution, and all of it withdrawn. The infant is then ready for operation with no harmful after effects, or unfavorable operative condition for the surgeon.

advocates of the two methods, medical and surgical, being divided into two distinct groups. The method of treatment will depend a good deal on the degree of spasm believed to be present. Those who regard the condition purely as a primary hyper-

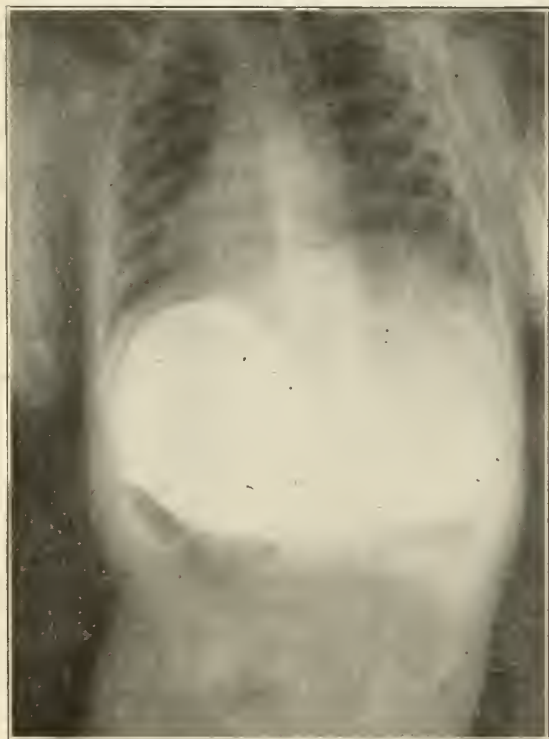


Fig. 2. Roentgenogram fifteen minutes after filling with barium showing complete retention and blunt rounded ends of stomach.

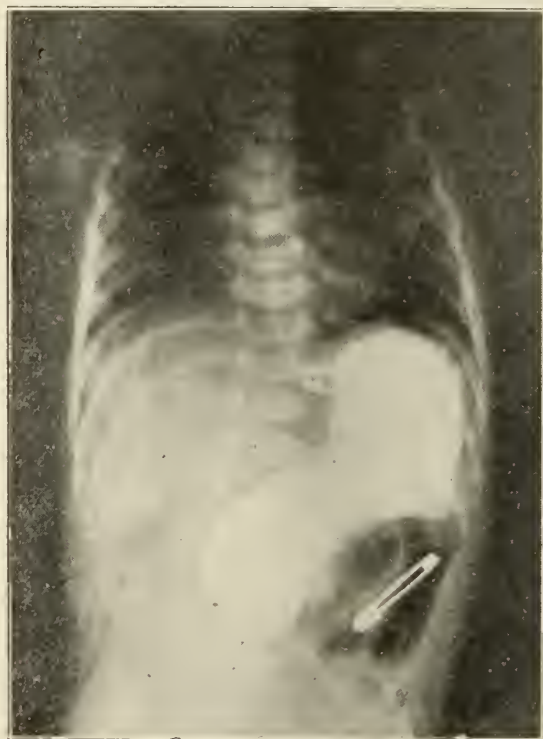


Fig. 3. Roentgenogram five minutes after introduction of first syringe of barium showing hyperperistalsis and rounded ends of stomach.

Some few depend upon an x-ray film study, stating that if there is a 50 per cent gastric retention or more at the end of four hours the case should be treated surgically, but if there is not over 30 per cent retention the case should not be treated surgically. This method of examination cannot be relied upon because in most cases of spasm and stenosis partial or complete vomiting of the contents of the stomach occurs before the four hour period has elapsed. If the vomiting has been complete before the four hour period, the study will be of no value, and if it has been partially vomited there is no possible way of estimating the percentage of gastric retention.

TREATMENT

The treatment of this condition has become somewhat of a debatable question, the

trophy or a hypertrophy with but little spasm present will favor surgery. On the other hand, those who regard spasm as the main factor in the production of symptoms, and hypertrophy of little importance, will not only rely upon medical treatment but may prolong it unduly until the patient is a poor surgical risk. Some pediatricians report excellent results by medical treatment alone. Sauer has published a comprehensive statistical comparison of medically and surgically treated cases, showing a lower mortality for medical treatment. Such a comparison is inaccurate and misleading. First of all is the question of inaccuracy of diagnosis, for other causes of vomiting and inanition have diagnostic points similar to true stenosis. Differential diagnosis between pylorospasm and pyloric stenosis is practically impossible. Moreover, it should

be remembered that most cases treated by surgery are those in which medical treatment has failed or those considered too severe to even warrant an attempt.

Most of the cases treated medically which do not respond are eventually submitted to operation, so that a considerable portion of these could have been credited to medical mortality had this treatment been continued.

There should be no question of "medical *versus* surgical" treatment of pyloric stenosis. All cases should first be given the advantage of adequate pediatric care, and no case is surgical from the very beginning. The problem to be solved is that of maintaining at least a minimum of nourishment for the development of the infant. This is strictly the pediatrician's problem. It thus falls to the pediatrician to say which cases require surgery, and it is his responsibility to prepare for operation and to supervise feeding after operation.

SURGICAL METHODS

The present operation of pyloroplasty or partial pylorotomy, commonly called the Rammstedt or Fredet-Rammstedt operation, has been the result of a process of evolution. Among the first surgical procedures to be performed was divulsion of the pylorus. This was practiced by Loreta who divulsed the pylorus through an opening in the stomach. This operation was soon abandoned due to disadvantages of trauma hemorrhage, edema, and possible contamination of the peritoneum.

The next generally accepted method of treatment was the performance of posterior gastroenterostomy. This gave good results in the cases that recovered, but required a high degree of technical skill and experience in infant surgery. The mortality rate was so high, even in the hands of the most skilled surgeons, that it was too formidable for use except in rare instances. Many cases in which operation was not performed because of the fear of operative mortality resulted in death.

The next operations were the pyloroplasties. One with a complete pylorotomy was recommended by Heinecke-Mikulicz. This had the disadvantage of being very difficult to perform, on account of the thickness and hardness of the hypertrophic pyloric

ring. However, several cures were reported by this method. Nicoll next performed a v-shaped partial pyloroplasty; then, the simpler straight incision down to but not through the mucous membrane was introduced by Fredet. We are really most indebted to Fredet for the operation as practiced today. It was his recognition of the true pathology present, that of a hypertrophic pyloric muscle, with a redundant and easily separated mucous membrane within it, which enabled him to devise an adequate operation. About two years later Rammstedt reported two cases in which he performed almost identical operations. If the operation is to be known by the name of a surgeon from the viewpoint of priority, it should be called the Fredet operation, rather than the Rammstedt.

FREDET-RAMMSTEDT OPERATION

Preoperative preparation is left to the pediatrician. Either local or general anesthesia may be employed. When local anesthesia is employed it is often necessary to give a little ether to facilitate closure of the incision.

An incision about two inches in length is made through the upper rectus muscle, so placed that the lower border of the liver is in the middle of the incision (Fig. 4). The

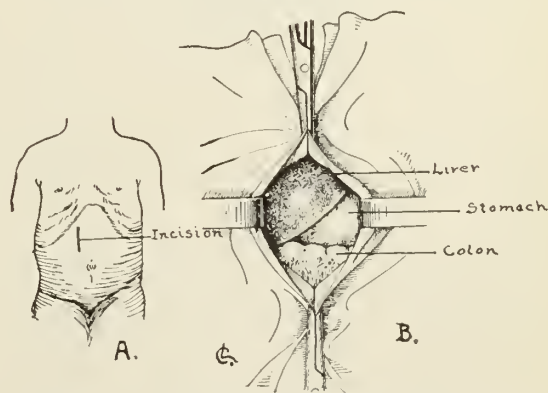


Fig. 4. (A) Upper right rectus incision about 4 cm. in length so placed as to overlie the liver.

(B) Margins of wound retracted exposing the liver, stomach and colon.

incision should be placed high so that it will be backed up by the liver, which normally hangs two finger-breadths or more below the costal margin in an infant. When the liver is pushed out of the way by the fingers entering the abdominal cavity, the in-

cision is effectively plugged should the patient strain. At the end of the operation the liver drops behind the wound making evisceration less likely.

The pyloric tumor is usually located by the exploring fingers high up and well protected by the liver margin, which explains the difficulty in palpation before operation. It is delivered into the wound and held between the thumb and forefinger of the left hand. It is then rotated until the most anemic area is found. It is important to make the incision in such an area, because control of hemorrhage is not easy in such an indurated and friable area. More than the normal amount of oozing can best be controlled by hot packs and pressure.



Fig. 5. Delivery of pyloric tumor and section in an anemic area.

The incision in the pylorus is made in its longitudinal axis through the serous and muscular coats down to the bulging mucosa (Fig. 5). The incision is then spread with a small forceps (Fig. 6) and the mucous membrane freed sufficiently to allow it to bulge through the wound above the serous level. This insures an adequate lumen. Great care must be taken to avoid cutting through the mucous membrane at the duodenal end, as the pyloric muscle thins abruptly at this point. At the gastric end the muscular layers thin more gradually. There is also a sulcus around the duodenal end into which one may cut unless extremely careful. (Fig. 7). If per-

foration occurs the rent may easily be repaired by means of a fine ligature.

When one is satisfied with hemostasis, the amount of muscle divided and the bulging of mucosa, the parts are replaced without further treatment. No attempt is made to cover the wound with omentum.

The abdominal wound is closed by careful anatomic approximation of layers. A

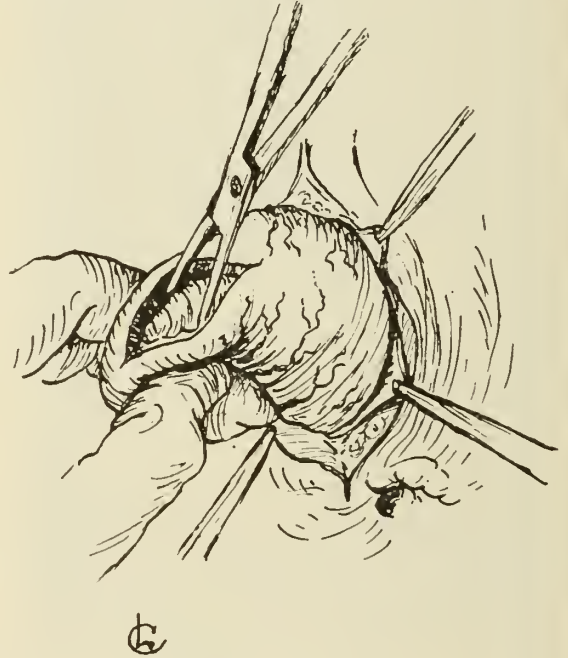


Fig. 6. Separation of incised muscle ring from constricted mucosa.

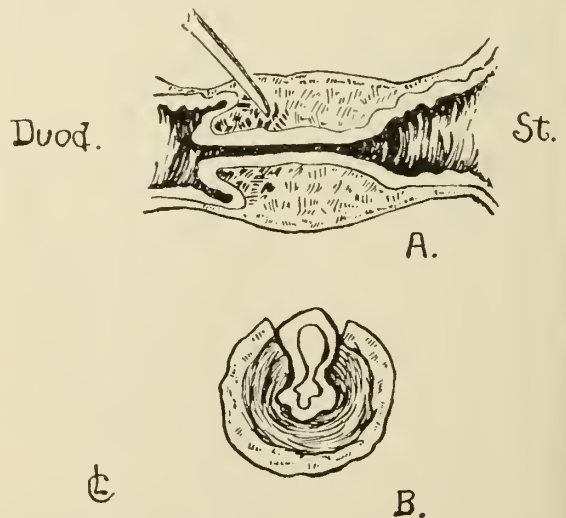


Fig. 7. (A) Diagrammatic longitudinal section of the hypertrophied pylorus illustrating danger of opening into the duodenum.

(B) Bulging of the constricted mucosa after section of the muscle ring.

double strand of No. 00 chronic catgut closes the peritoneum and posterior rectus sheath with a continuous suture, which is continued up the anterior sheath. The skin is then carefully apposed with a fine strand or dermal fiber in continuous locked sutures.

There is a tendency on the part of some to feel that it is poor surgery to leave unprotected an incised peritoneal surface with bulging mucosa. Strauss has added the dissection of muscle flaps from within, folding them outward and bridging the gap by suture to the opposite side. He then covers the raw surface with tags of omentum. While this procedure has been followed by good results in his hands, the great preponderance of surgical statistics indicate that it is entirely unnecessary. Moreover, we believe this operation could not be performed in all cases. The pyloric tumors we have observed have been too friable to permit of further plastic work.

When one considers the intricacy, the extra time consumed, the danger of hemorrhage and unsuitability of this tissue for operative manipulation, further procedures for the sake of appearance alone seem unjustified.

RESULTS

Following the Fredet-Rammstedt operation the pylorus becomes anatomically and functionally normal. An interesting report is that of Wollstein on the autopsy findings of twenty-eight cases of hypertrophic pyloric stenosis, in which the patients had been operated upon and had died from other causes at varying periods, some as long as two years subsequent to the operation. In twenty-three cases in which the Fredet-Rammstedt operation had been performed the patients all showed an apparently normal pylorus; and in five cases with a gastroenterostomy the tumor formation about the ring was still present. These findings offer no support to either stenosis or spasm as the etiological factor, since the longitudinal incision is not a denervating operation and the cutting of circular fibers with release of constriction of mucosa would provide an adequate lumen in either case. Many patients have now been followed for varying periods up to fifteen to eighteen years and in no instance has there been evi-

dence of pyloric obstruction or any symptoms referable to the operation. Careful analysis of follow-up results in large clinical centers forces the conclusion that there is no interference with normal development.

PROGNOSIS

The duration of symptoms and the extent of emaciation under medical management are the most important factors affecting prognosis. In our small series of six cases there had been aggravation of all symptoms under adequate pediatric care, yet all recovered. A single fatality resulted in an infant in whom the Fredet-Rammstedt operation was performed in the absence of hypertrophic stenosis. It was thought at that time that spasm was the cause of symptoms. No autopsy was performed, but the infant is believed to have died from other causes.

The statistics of Downes and Bolling, who have themselves operated on 611 cases, are very interesting. Gastroenterostomy was performed in thirty-one of the earlier cases, and the Fredet-Rammstedt in 580. They report a gradual reduction in operative mortality until at present it is less than 4 per cent over a period of years. The operative mortality should not be more than 1 per cent when diagnosis is made promptly and it is realized that the great field of surgery is in that group of breast fed infants between two and six weeks of age. There is no more satisfactory operation in surgery than the Fredet-Rammstedt performed on a breast fed baby that is not in a critical condition.

SUMMARY

(1) Our series of cases is quite small and nothing new is introduced in the management.

(2) Cases of congenital hypertrophic pyloric stenosis have sufficient degree of spasm to justify medical treatment in all cases at the beginning. The progress of the case is best shown not by the symptoms in general but by the degree of emaciation.

(3) Roentgenographic examination by repeated fluoroscopic observations over a period of twenty to thirty minutes is advocated.

(4) There should be no division into "medical" and "surgical" treatment. It is

the responsibility of the pediatrician to say which cases require surgery and to prepare for operation as well as supervise feeding after operation.

(5) The Fredet-Rammstedt operation is the accepted procedure in these cases. It is easily performed and entirely curative. There is no interference with development, or untoward symptoms referable to the operation.

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THE RELATION OF ROENTGENOLOGY TO OTHER BRANCHES OF MEDICINE*

K. F. KESMODEL, M. D.
Birmingham

Except for those who have followed roentgenology from its beginning, it is difficult to conceive of the rapid advance made by this branch of medical science. Slightly over thirty-five years ago the first news of the new rays was received with varying reactions. The first information was received from the daily press, before Professor Roentgen's original article appeared in a scientific journal. The properties ascribed by the press to the new ray were ludicrous. Within the next few weeks, Roentgen's original article appeared, soon followed by two others. So complete were these three articles that little has been added by later physicists. Roentgen could not know the multitudinous applications his

discovery would have in medicine, though he did give an excellent start with the plate of his wife's hand. The ring displayed how easily foreign bodies could be seen. The bones were sufficiently clear to demonstrate the possibilities in the field of osteology.

Some physicians soon realized the possibilities of the ray as applied to medicine and began to work with the new discovery. Using machines with which they were entirely unfamiliar, the earlier workers necessarily sought aid from those who knew something of the apparatus. Physicists were therefore consulted regarding the operation of the machines. As difficulties in processing the negatives were encountered, photographers were consulted. Though necessary, this was a most unfortunate occurrence. We have not yet overcome the production of the x-ray "photograph". In the early days, considerable time was necessarily spent in developing technique but too little time was given to the interpretation of the shadows seen on the negative. Much of the progress made by some of the early workers was jealously guarded and learned by others only by experience.

In spite of this, however, excellent results were obtained. Cannon and Williams published their work on the use of opaque material in the alimentary canal. Because of the long exposures necessary, they were unable to clearly demonstrate their screen findings on the plate. Crane and others published excellent papers concerning their work on the thorax, to which not a great deal has been added. As technical difficulties were overcome, the resulting negatives were greatly improved so that the observations made upon the screen could be recorded. In addition to these activities during the first ten years, two excellent texts appeared, one by Pusey and Caldwell and another by Francis Williams.

Despite success attained, other branches of medicine were slow to accept the advances made by these pioneers. Notwithstanding the publication of advances made in roentgenology, two of the leading medical texts of the time contained very little regarding the uses of the x-ray in medicine. In Osler's "Practice of Medicine", 1905 edition, no mention of the roentgen ray is made in the index and very little is found

*Read before the Association in annual session, Mobile, April 21, 1932.

in the text. In the 1907 edition of DaCosta's "Modern Surgery", only slightly more information was given.

This is in marked contrast to conditions of today. One rarely reads a medical journal now in which the use of the roentgen ray is not mentioned. To present the complete outlook of roentgenology as of the present time would be a most tedious task, yet the process of development and the ultimate accomplishments are extremely interesting.

When technical skill had advanced to the degree that a readable negative was obtained, more and more attention was given to the images reflected on screen and plate. It soon became evident that it required more than passing knowledge of anatomy, physiology and pathology, to wholly interpret the conditions depicted. It was only after studying innumerable patients that the variations of the normal were determined. The roentgenologist of today now has all of this valuable experience at hand. There are now no secrets in matters of technique; each new device or method is willingly published. Today one may duplicate the work of another roentgenologist if it is so desired. Interpretation is now of more importance. The only technical requirement is a clear demonstration of the pathology at hand.

The essayist hopes he may be pardoned if he pauses here to dilate regarding "the demonstration of the pathology at hand". To many physicians, and thereby to their patients, it would appear that this means only the simple process of "making a picture". The patient is referred to the radiologist for "an x-ray picture of the lungs" or for "an x-ray photograph of the stomach". The unfortunate part of it is that the patient too frequently believes the roentgenologic study is nothing more than the making of the film. Since, in the majority of cases, the patient comes to the roentgenologist alone, the referring physician has little opportunity to realize the extent of the examinations made on that patient. The "picture" of the lungs becomes a careful fluoroscopic study to obtain some idea of the pathology suspected and how best to show it. Similarly, the "photograph of the stomach" becomes a fluoroscopic study of several days duration in order to

see the intestinal tract in its entirety. The lesion may be found anywhere from the stomach to the rectum. There are a few who refer their patients with definite information as to what is suspected. To work with them is a pleasure. I have always felt that to obtain the most from the roentgenologic examination the clinical picture is of considerable value. As the roentgenologist makes his immediate diagnosis from his observations on the screen and film, a clinical history or working diagnosis can do no harm and is of considerable benefit. One does not use every trick of trade known for every part taken in the average routine examination. It would be too expensive. However, if in the course of the examination a suspicious area is found, one resorts to further study to prove or disprove the suspicion. I do not believe the average physician realizes the harm carried in the phrase "x-ray picture". It has the same effect as it would have on the patient referred to a surgeon to "slit open his belly" and "dig out his appendix", as Dr. Case¹ expressed it. Terms of this nature tend to degrade the profession. So in roentgenology, if the more technical word "roentgenogram" is too much to say, let us at least speak of an x-ray "study" or "examination". At least refer to the negative as an x-ray "film" or "negative" rather than a "picture". The latter smacks too much of commercial photography. To the patient a "picture" is a "picture" and when charges are made for the services rendered, he can see no reason why he should pay more for a "picture" of the lungs than for a "picture" of the foot. With this help from other specialties, we may make our charges for the *examination* and make it proportionately for the services rendered. After all, adequate work can only be done when one can procure adequate material.

Roentgenology has now attained a well established and well deserved place in medicine. There is probably no specialty in which the roentgen ray is not of assistance. In surgery and in internal medicine the uses are legion. Today it is rare that a fracture or a dislocation is not submitted for roentgenographic study. Not only is it an aid in the immediate treatment but also for possible ultimate legal procedures which so frequently follow. Today it is rare

for a peptic ulcer to be treated without one or more roentgenologic checks to determine its progress, or the result of operative procedure. The otorhinolaryngologist finds almost daily use for the x-ray. Many orthopedic men feel that they could not continue were it not for the aid obtained by roentgenologic examinations. Pediatricians frequently request aid in differentiating pylorospasm and stenosis and almost every "blue baby" is examined for the possible presence of an enlarged thymus. The obstetrician sometimes wishes to know more of the pelvic and fetal measurements than he can find on digital examination. Since the advent of the more improved methods of ventriculography and encephalography, the neurologist uses this aid to diagnosis. Many urologists would feel tremendously handicapped without the information obtained by the cystoscopic or intravenous pyelogram. Not only are the roentgenographic uses of the ray applicable to all branches but also the therapeutic. So we see that roentgenology has become a specialty within specialties. It becomes an integral part of a complete examination.

Since roentgenology has such wide application, one readily sees the necessity for constant and undivided attention. Ever changing and improved methods of eliciting pathologic changes are found in our journals. Newer methods of treatment are constantly encountered. In order that the patient may derive the greatest benefit, it is necessary to keep apace with the progress of time. It does not seem humanly possible for one individual to combine roentgenology with any other specialty and give each its full share of attention. There is no doubt that in certain specialties roentgenographic aid is of such import and frequent necessity that it is included in the armamentarium of that specialist. This is true in a specific instance rather than in general. Similarly, in small communities where there is insufficient work to require the full time of one individual, it becomes an inclusion through necessity. A comparison of the work done under such circumstances with that done in the x-ray department of a large institution graphically illustrates the difference. The specialist who installs x-ray apparatus in his office as an adjunct to his chosen work considers roentgenology

secondary to his specialty. He uses only that part of radiology necessary for his peculiar needs. At best, such a procedure is an expensive luxury. He therefore purchases the least expensive machine with the fewest accessories possible. He is therefore able to do only a limited amount of work and that only sufficiently well to satisfy himself. There is no initiative to improve his work in radiography. Since he is busy with his favored specialty, he has not the time to keep abreast of the changes in his adopted asset. If one specialist does this, there is no reason why another and another should not do likewise. Certainly the manufacturers and their distributors are not loathe to sell them a machine "with full instructions how to operate it". It does not take a great deal of foresight to see the outcome. There would be so few patients left to send to the specialist in roentgenology he could not make expenses. The physician who specializes in roentgenology must use apparatus that gives the best results in any part to be examined. He must have accessories that will more clearly depict the pathology to be found. He must be cognizant of the advantages of various positions for demonstrating certain conditions and have the necessary apparatus to maintain that position. In therapy he must be able to measure the dose given in such terms that another may duplicate his treatment, or that he may be able to duplicate that of another. All of this means a tremendous expense which can be met only by seeing a large number of patients. This cannot be obtained if each specialty does its own radiography any more than the otorhinolaryngologist can exist if the general surgeon does all of the work in this region except the mastoids and the bronchoscopies. The tonsillectomies help. If the best results are to be obtained, each must perform in his own specialty. The patient whose physician consults the pathologist and the roentgenologist will get the best of medicine.

If roentgenology is to live as a specialty, and remain an aid to all branches of this science, the radiologist must do his part. In a recent article, Dr. R. T. Wilson² tells us that a field representative of the American College of Surgeons stated that "no hospital service is stronger than its departments of pathology and roentgenology."

Along the same line, Dr. A. W. Crane, some time ago said, concerning the roentgenologist, "he must know more than the internist, the surgeon, the urologist or other specialists about the diagnosis of disease. He must take all pathology as his province, because roentgenologic research is mostly the translation of pathological conditions into terms of roentgenology". This is a high ideal, yet we can but seek to attain the goal. We may not evade. We will attain it only by our own endeavors, an exhibition of our abilities, not by any amount of argumentative dissertations.

"Let not the consulting room of the internist, the laboratory and the x-ray room become chambers of discord. The diagnostician without the x-ray is blind, but he who is without the stethoscope and percussion is deaf. Let not the deaf argue with the blind, for such is without profit. But let the deaf put away their deafness and the blind put away their blindness. Then will a miracle come to pass, that the art of diagnosis will have a new birth." (Dr. A. W. Crane).

703 Med. Arts Bldg.

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TYPHOID CARRIERS*

OBSERVATIONS OF THEIR DISTRIBUTION

LEON C. HAVENS, M. D.
Montgomery

It seems a constant characteristic of the advance of knowledge that generalizations are qualified by specific data; concepts are altered and viewpoints change. This is certainly true of our knowledge of the healthy carrier condition and the relation of the human carrier to the spread of infections. The healthy disease carrier was first recognized only as a result of an attempt to prove that the organism known as *B. diphtheriae* was not the cause of diphtheria, since it was found in apparently normal throats, in the absence of the disease. It was soon demon-

strated, however, that such persons had always been in contact with, or were recovering from, diphtheria. These were the first observations of the contact and the convalescent carrier.

The healthy typhoid carrier was not discovered until 1900 by Horton-Smith¹, and the full significance of his importance in the epidemiology of the disease was recognized only after the exhaustive German investigations in 1903-1907, thus proving Koch's dictum that the primary source of typhoid is man himself, and that transmission is more direct than was formerly supposed. These investigations, together with a number of carefully studied outbreaks in England, brought forcibly to the attention of health officials and epidemiologists the role of the healthy carrier in the production of typhoid fever. It is no longer sufficient for an epidemiologic investigation to rest with the discovery of a polluted well or an infected milk supply. The ultimate human origin must be found, the carrier (or the active case) who is the primary cause.

It has been generally accepted that typhoid carriers result from an attack of the disease. These are of two kinds: the convalescent carrier who excretes typhoid bacilli for a short time following the acute attack; and the permanent carrier who continues to harbor the organisms for an indefinite period. Evidence, however, is accumulating that the carrier state occurs without a history of a clinical attack, and, at least in regions of high prevalence, such contact carriers are common. Epidemiologic investigations in Alabama have revealed, in connection with at least two outbreaks of typhoid, healthy persons who yielded positive feces cultures. These persons gave no history of typhoid fever and the evidence pointed clearly to the fact that they acquired the infection at the same time as those who became sick. Repeated cultures from these persons showed that, in general, the carrier state was temporary; when they were excluded from sources of infection they rapidly got rid of the organisms.

Aside from their significance to the epidemiology of typhoid fever, which is great, these observations raise the question—a fundamental one—concerning the reason

*Read before the Association in annual session, Mobile, April 21, 1932.

1. Brit. M. J. 1,827 (1900).

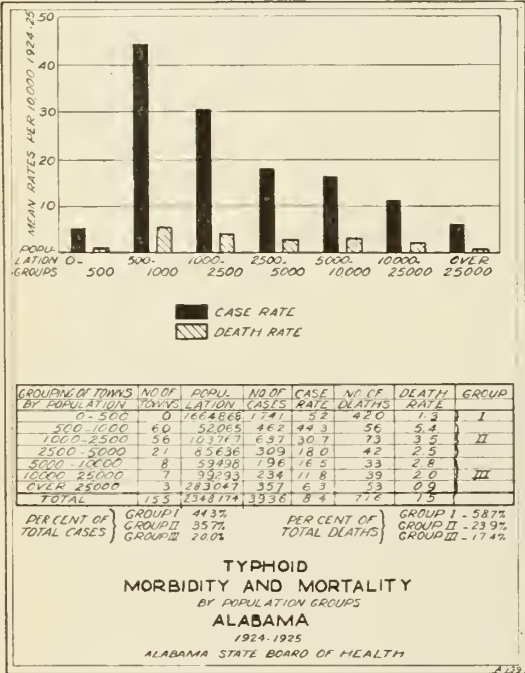
why some persons suffer an attack of the disease, while others, with the same degree of exposure, throw off the infection at once, and still others remain well but continue to harbor the bacillus for varying periods of time. The explanation is obviously a matter of relative immunity. But we have evidence that some infections, at least, have a geographic distribution in this respect. A far higher proportion of cases to healthy carriers results from exposure to the diphtheria bacillus in northern latitudes than in the tropics and there are some observations which indicate that this is true also

typhoid infection, also, in the tropics and subtropics, results in a lower proportion of clinical disease and a correspondingly larger number of subclinical infections.

This comparatively large proportion of subclinical infections receives support from observations on the occurrence of typhoid agglutinins in normal persons. We have examined the serum of 1136 persons, 263 (23%) of whom proved positive. It was possible, in the case of 60 of these persons, to ascertain whether they had previously been vaccinated or had a clinical attack of typhoid fever. Only 7 had received the vaccine and a history of typhoid was obtained from five others, leaving 48 persons with no known contact with the typhoid bacillus. While histories are notoriously uncertain, the results indicate that only 20% of all positive Widal reactions are the result of a clinical attack of typhoid fever or vaccination. Agglutinins for other infections which are known to be comparatively uncommon, such as tularemia and undulant fever, are rarely found in normal persons. It follows, therefore, that the logical explanation of this high incidence of typhoid agglutinins is as the result of subclinical infection, with the consequent production of a correspondingly large number of temporary carriers.

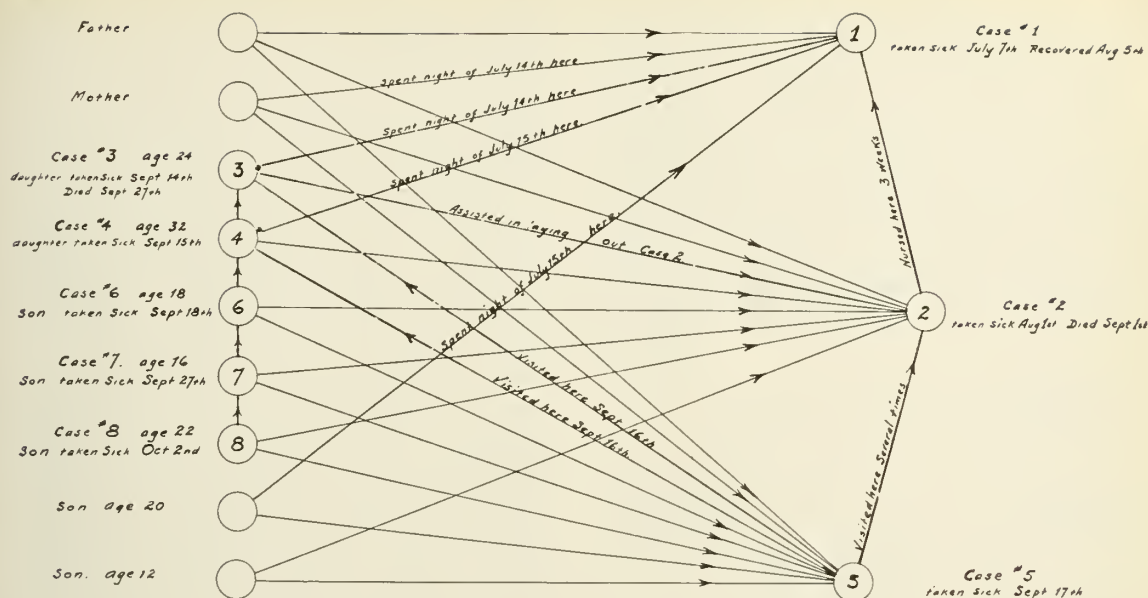
Other beliefs regarding the distribution of typhoid carriers have been upset by these studies. It has been generally accepted that women become carriers more frequently than men. There is no anatomic or physiologic basis for any difference in sex distribution and, as a matter of fact, the incidence of the disease is higher in males. The origin of the larger number of *known* female carriers is doubtless in their closer association with the preparation of food, with the consequent increased chances for spreading the infection, thus resulting in the demonstration of the carrier state. In the surveys quoted above, where cross-sections of the total population were examined, it appeared that sex had no influence on the carrier condition. In Alabama, for example, in the examination of 348 persons who gave a history of typhoid at least one year prior to the study, 9.3% of males and 9.6% of females were found to be carriers.

Similarly, children are supposed to become carriers less often than adults. Our



for typhoid. The generally accepted typhoid carrier rate is considerably less than 1% of the total population, based on studies made in Germany, Washington, D C., New York and other northern districts. Carrier surveys made in the South have always shown a much higher incidence.

The typhoid carrier rate in the general population of Alabama, based on a survey of the dairy population, is 3.6% ; in Louisiana, examinations of a similar group yielded 4.0% ; while studies in Kingston, Jamaica, gave 3.5%. Such consistently high rates as these, many times the number found further north, are strongly indicative of an epidemiologic situation similar to diphtheria, and lead to the belief that ty-



W. D. Wrightson

observations show no difference in various age groups; of these 348 recovered cases, 215 were under 20, of whom 20, or 9.3%, were carriers; among 133 persons over 20, there were 13 carriers, or 9.8%.

Some evidence appears from these studies that typhoid carriers are not necessarily permanent. Thus, among 157 persons who had typhoid less than five years, but more than one year, previous to the examinations, there were nineteen carriers (12.1%). One hundred and ninety-one persons gave a history of an attack more than five years before, and, of these, only 14 or 7.3% were carriers. This figure is only slightly more than half that for the more recently recovered cases and indicates that the carrier condition tends to clear up over an indefinite period of time, even after several years duration.

That the healthy carrier is the chief source of typhoid fever today has been repeatedly demonstrated. Studies of the distribution of typhoid fever in Alabama² have shown that the majority of the cases occur in the small towns of from 500-2000 population, where sanitation is inadequate

2. Leach, C. N., and Maxcy, K. F., Pub. Health Rep. 41: 705-710, April 16, '26.

and public water supplies are not above reproach. In the strictly rural areas, where the population is scattered, and in the well-sanitated cities, the typhoid rate is low. This is readily understood when the mechanism of transmission is considered. A healthy carrier living on a farm has little opportunity to infect others than the members of his immediate family. The danger of the urban carrier is diminished by adequate sanitation and close supervision of water, milk and food supplies. But in the small town or village, the healthy carrier finds ideal conditions for spreading the infection. He lives in close proximity to his neighbors, sewage disposal is often improperly safeguarded, and milk and water are ready vehicles for spread beyond the immediate household.

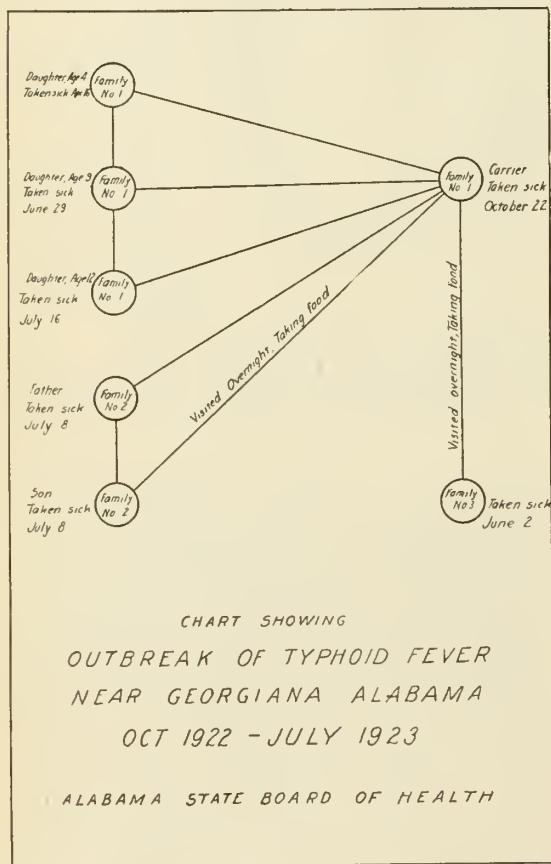
Any further significant reduction in the typhoid rate rests upon the control of the carrier. This is beautifully simple in theory, but the practical application of measures to limit the danger of the carrier, even after the difficulties of his original detection have been overcome, is one of the most baffling problems of the public health authority. It is practically impossible to effectively control these individuals without

their removal from society. In the present stage of public enlightenment this is impossible and in any case would be very expensive. No treatment has been found that is practical and safe. Cholecystectomy will terminate the condition in the great majority of cases, but this is a major operation involving some risk as well as considerable expense to the carrier. It is being tried on a voluntary basis in Massachu-

ported to the State Board of Health has averaged 1200. This means that the State is being seeded with at least 120 new carriers per year, in addition to an unknown number of temporary contact carriers. This figure is lower than the actual number, since the cases which actually occur are not completely reported. As we have seen, these carriers are concentrated chiefly in the smaller towns where conditions make it possible to do the most damage. A vicious circle is thus established.

The logical place to break this chain of events is with the active case. There are two basic measures which should be rigidly enforced in every case of typhoid fever. It is the duty of the attending physician, furthermore, to initiate them. Unfortunately, neither of these receives the conscientious attention which would minimize the secondary cases and the danger of the healthy carrier. Strict bedside prophylaxis is obviously not practiced, as evidenced by the frequency with which secondary cases occur. The accompanying charts illustrate the typical rural outbreak. It is seen that in each of these, from six to twelve additional cases developed following exposure to the original patient. Even rudimentary precautions would have prevented more than half of these secondary cases. In other words, these two examples alone, which are in no way exceptional, represent a dozen or more entirely unnecessary and wholly preventable cases of typhoid fever.

The second measure is culture of feces and urine during convalescence. It is as important to know how long the typhoid patient is excreting the infection as it is to isolate the case of diphtheria until bacteriologic examination shows that he is no longer infectious. The practice of the detection and regulation of the carrier of years standing, after he has caused an outbreak, while remaining in complete ignorance of the new carriers who are constantly being produced, is as effective in the control of typhoid fever as would be the attempted control of malaria by killing individual mosquitoes and ignoring their breeding places. No typhoid convalescent should be released from isolation until three successive specimens of both feces and urine, at intervals of seven days, are negative. Our public health regulations require these examina-



setts but, because of its nature, it is doubtful if it could be made compulsory. The fact remains, however, that sanitary surroundings, coupled with intelligence and diligence in personal hygiene, have been repeatedly shown to greatly minimize the typhoid carrier as a source of infection.

A program for the control of the healthy typhoid carrier which does not include provision for the detection of new carriers who are constantly being added to the population is entirely inadequate. Our studies indicate that one of every ten typhoid patients becomes a chronic carrier. During the past five years the annual number of cases re-

tions, but they are rarely enforced. While it may be, and often is, impracticable to attempt isolation for the period of time which is sometimes necessary before a convalescent patient ceases to be infectious, the knowledge that the carrier state exists is of real importance. The average carrier of reasonable intelligence will, if he is informed of the significance of his condition, cooperate conscientiously in measures of personal hygiene which will greatly lessen the chances that he will infect his associates.

Organized public health activities are dependent, for permanent progress, upon an enlightened medical profession. Further control of typhoid in Alabama will, therefore, be an index of the interest and cooperation of the practicing physician, particularly in respect to these two measures: (1) strict bedside prophylaxis and (2) repeated cultures from convalescent cases. It is here, above all other conditions, that the obligation of the physician extends beyond his individual patient; it is as much his duty to protect the immediate contacts as to cure the active case.

ELECTROCOAGULATION OF THE TONSILS*

A. B. HARRIS, M. D.
Birmingham

For a long time effort has been made to devise some means of removing the tonsils other than by the somewhat disagreeable orthodox cutting tonsillectomy. The actual cautery and fulguration have been tried and discarded on account of the scarring, pain, hemorrhage and other consequences attending their use. X-ray and radium have not measured up as these agents cause atrophy up to a certain point only, beyond which they are ineffective. Electrocoagulation now appears as the procedure more nearly fitted for the role than any of the others, since in the hands of skillful operators the tonsils may be completely removed with little pain or other disagreeable phenomenon.

It does not replace the classical cutting tonsillectomy but serves as an important adjunct, finding its principal usefulness in

that rather broad field where the cutting operation is contraindicated; more specifically it is serviceable in cases of hemophilia, anemia, advanced heart lesions, the aged and in those cases refusing the orthodox method. It is unexcelled for the removal of tonsil tabs following incomplete tonsillectomies and for lymphoid hypertrophies.

Electrocoagulation is not applicable to young children, highly nervous individuals, or those who have abnormally sensitive throats.

A perusal of the rapidly growing literature on this subject may leave the erroneous impression that the method is simple. With some variation the technic is much the same with all operators. A thorough knowledge of the anatomy of the tonsil and surrounding structures, as well as a familiarity with the classical surgical tonsillectomy, are essential. A surgical diathermy unit supplying a proper coagulating current is used. The arrangement of the indifferent electrode varies, but I have found the connection to a metal chair the most practical. To the active electrode an appropriate needle is attached. The needles vary in size and shape to conform to the type and location of tissue to be destroyed. Local anesthesia, in the form of a fifty per cent solution of cocaine in adrenalin chloride (1-1000) as a topical application, is recommended. A single cotton applicator is moistened in this solution and this amount is used for one tonsil by repeated applications at intervals of two minutes. In ten minutes the anesthesia is sufficient. If the patient is highly sensitive to cocaine five grains of barbital may be given by mouth thirty minutes beforehand. One tonsil is treated at a sitting, the upper pole receiving attention first, since it is in this area that toxic absorption is most active.

Electrocoagulation must be confined to the tonsil itself. Charring of the tissues is to be avoided. A fractional coagulation is done in every instance, the extent of which is governed by the toleration of the patient and the proximity to the pillars, capsule, plica triangularis and other important structures. In ten to fourteen days the coagulated area has disappeared. This process is repeated on alternate sides in from five to seven days until the tonsils have been removed. The average number of

*Read before the Association in annual session, Mobile, April 21, 1932.

treatments to each tonsil is five. In the event of pain or discomfort the patient is instructed to use an aspirin gargle.

When this has been properly carried out there is a complete removal of the tonsils, leaving clean fossae with thin, soft, elastic scars as nearly ideal as one may hope to attain. The pillars and capsule are intact, the normal anatomic relations preserved and the physiologic function undisturbed.

It is gratifying to note the constitutional improvement after the second treatment, in a majority of cases. A gain of weight is the rule. Skillern, in his work at the Postgraduate Hospital of the University of Pennsylvania, found to all appearances that the heat necessary to destroy the tonsillar tissue destroyed the infecting organisms within the depth of the crypts.

I have selected a group of fifty consecutive cases for analysis. They lend themselves readily for this purpose since the technic I have just described was used throughout. All were in private practice, were done in the office, were ambulatory and remained so during the time they were undergoing treatment, and all were adults between the years of seventeen and seventy-one. Thirty-one (62%) were males; nineteen (38%) were females, all falling within that class of cases where electrocoagulation is indicated. Two cases in the series were not completed. One, suffering with acute arthritis, after having had several treatments, left town for climatic therapy, where during a stay of several months he elected to have the fragments removed surgically. The other, feeling pain at the second sitting and finding himself relieved of rheumatism, declined further treatment. All other cases were completed with satisfactory results. Two of these had mild secondary hemorrhages. Four suffered pain either at the time of treatment or subsequently as a result of it. Two in this last group had in addition to pain a mild transient edema of the uvula and soft palate. It was customary for patients to notice some soreness on swallowing. No further untoward symptoms were noted in the entire series. End results compare favorably with those obtained by any other method.

Electrocoagulation is a tedious process. Often it is difficult to restrain one's own

desire and that of the patient to rush the work to completion. A massive coagulation is usually an effective deterrent, aside from the danger of unhappy complications.

Since the completion of this series I have altered the technic in some respects. At the suggestion of Dr. T. F. Wickliffe of Jasper, Alabama, I have of late been using as an anesthetic, equal parts of cocaine, menthol and phenol. This applied sparingly to the area to be coagulated produces the best anesthesia of any of the various preparations I have used. The only objection to it is that it blanches the tissues so completely as to obscure landmarks when working near the capsule. Other refinements of technic, with seances at five-day intervals, materially reduce both the number of treatments and the time consumed.

Electrocoagulation should remain in the hands of trained laryngologists and those specifically fitted for the work as an adjunct to the classical surgical tonsillectomy. Grave dangers attend its use by the uninitiated.

605 Medical Arts Building

CULTIVATING THE CHILD'S APPETITE*

AMOS C. GIPSON, M. D.
Gadsden

If the general practitioner of thirty years ago had been told that within his lifetime infant mortality from feeding difficulties would be reduced to an almost negligible percentage in the better communities, he would have been incredulous. If he had been told that one of the major problems of pediatrics would be to get children to eat, his incredulity would have been even greater. Yet these two statements are true today.

It is an interesting fact that advances in medical knowledge may bring in their wake new problems to be overcome and that these difficulties may delay or modify expected benefits. Thus, for instance, the discovery and use of insulin have increased rather than decreased the number of diabetics living. Although a powerful method of treatment has been developed, the incidence of

*Read at a meeting of the Northeastern Division of the Association, Scottsboro, June 3, 1932.

the disease has not been reduced and many thousands of these patients are now alive who without insulin would have died. This same thing may be said of other diseases.

Similarly, the science and art of feeding children have advanced so far during the present generation that few need now perish through failure to suit the diet to the child. Whereas, within the memory of all of us, the mortality rate of infants under one year of age was about twenty-five per cent, now, among our well-cared for people, the death of an infant from feeding difficulties is so unusual as to be almost a public calamity. One result of this achievement has been that many thousands of children, poorly fitted at birth to withstand the rigors of life, are now being reared to maturity.

Statistics show that a large per cent of all children present the symptom of loss of appetite in more or less degree. Various physicians have stated that between fifty and eighty-five per cent of the children who come to their offices presented the appetite problem in more or less marked degree.

All are agreed that among poor people the trouble is far less prevalent. It is rarely encountered among convalescents in hospital wards and is almost never seen among healthy children in orphanages. But so widespread is the condition that the word *anorexia*, hitherto a strickly scientific term for poor appetite, is now being used quite familiarly at the afternoon bridge table child health conferences.

This situation now confronts us. On the one hand are arrayed physicians, parents, and nurses, armed with a knowledge of dietetics with which they think it possible to develop a generation physically superior to any we have yet seen in modern civilized countries. Opposed to this formidable array are the children refusing to eat. At first glance the obstacle seems trivial, but experience soon disillusion one. A few attempts to force the bottle on an unwilling infant or a bout with an older child who has learned to use the regurgitation weapon when unduly urged will soon convince the most skeptical of the reality and extreme difficulty of the problem.

In embarking upon this adventure of raising children, and more particularly

here, of nourishing them properly, we cannot intelligently chart our course unless we have a fair conception of our ultimate aims.

It may be stated that we have a reasonable right to expect to develop each child to his own maximum of physical perfection. We cannot, on the other hand, expect success if we try to develop every child to any general standard of perfection. Hereditary differences assure variations in weight and stature which are beyond our control.

The *ideal achievement* would be to develop good appetites in these children instead of trying to force them to eat. Also, we should take into consideration the fact that these growing youngsters have a right to enjoy their meals and we cannot justly deprive them of this, one of the chief pleasures in life. Every time I see a child scowl at the mention of eating, I have a feeling that he is being monstrously cheated—"gypped", he would say if he were of the school age. We are not doing the best for our children when we thoughtlessly adopt measures which deprive them of one of life's fundamental pleasures.

Before proceeding further into the study of how to get our children to eat properly, let us investigate the nature of and the factors influencing hunger and appetite, our two greatest potential allies. It has been assumed by many that the two terms are synonymous and that hunger is simply an exaggerated appetite. If this were true, there would be no use for the two terms. On the contrary, as I shall try to point out, hunger and appetite differ in their origin, in their immediate purpose, and in the factors which influence them.

At the risk of appearing didactic, it may be well to consult the dictionary. According to Webster, hunger is a sensation due to want of food. The same authority says that appetite is an inherent or habitual desire for gratification. In other words hunger is a sensation; appetite a desire.

Hunger is a more or less painful sensation located in the general vicinity of the stomach. This sensation has been shown to occur synchronously with vigorous contractions of the empty stomach, "hunger waves or contractions".

Appetite on the other hand is a pleasant desire for food, referred more or less ac-

curately to the mouth or throat and being associated with a memory sense of enjoyment. We know of no physiologic cause for appetite analogous to hunger contractions, unless it be assumed that hunger itself has a stimulating effect on appetite. We believe this to be true. It is clear that hunger and appetite are unlike but allied and that any consideration of eating habits should be held on a proper understanding of these two factors and of their normal relationship.

The mechanism which urges us to eat is probably the following: The empty stomach begins rhythmical contractions which are relayed to the brain as painful or uncomfortable sensations; as an example of this, the cry of a hungry baby. This calls our attention to our stomach and that we are in need of food. At the first contact of food with the stomach, hunger contractions stop and the cry ceases.

Tampering With The Eating Reflex: Any interference with this natural mechanism of eating, since it theoretically interferes with the ingestion of normal amounts of food, challenges our attention. Anything which tends to retard the emptying of the stomach delays the sensation of hunger and increases the interval between these succeeding waves or contractions which set in motion the hunger-appetite reflex. Poor mastication of food, eating between meals, and the eating of foods which remain too long in the stomach are important factors tending to retard stomach emptying. Among these milk, nuts and fried foods take first place. High fever inhibits hunger contractions, even when the stomach is empty. This is one reason why we do not feel hungry when we are ill. What are the results of a poor appetite? It means that these children are "losing out" on one of the most natural and zestful pleasures of life, not occasionally but three times a day as long as they continue to have poor appetites.

Psychologic Factors Influencing Appetite: We are told that the "nervous child" does not eat well. It is equally true that the child who does not eat well is likely to be nervous. A psychologist might possibly denote this discussion to the influence of mental states or appetite, but I prefer to discuss the interrelationship between mental states and appetite. Having suggested

the extreme importance of the whole field of child psychology, let us consider for a moment or two some general characteristics of human minds which influence the child's reaction to food.

Negativism: The average human being is more or less endowed with that quality of mind which makes him want to do those things he is told he cannot do, and refuse those things he is told he must do. For example, witness the effect of prohibition. If a child is told he must eat, food immediately loses some of its attractiveness. The second characteristic of the human mind which has a bearing on the appetite problem is that most of us want to be important. The child learns that he gets more attention by refusing to eat; he enjoys being talked about afterwards. "I am a peculiar boy. I do not eat any cereal". Children who have learned the trick of using refusal to eat as a means of becoming important some time get to be tyrants in the home.

When the child refuses food, say nothing about it, decrease the amount rather than increase it or beg him to eat.

Avoid arguments with children, because if you do you give them a chance to win it. Allow only a reasonable time at meals; if he has not finished in this time take up his plate. Avoid disciplinary measures at meal time; make it as pleasant as possible.

Physiologic Factors Influencing Appetite: In the first place, since hunger is the natural stimulus under which appetite develops, it follows that all things which tend to vary the sensation of hunger may have a corresponding influence on appetite. Most of these have already been mentioned. It remains to consider methods for insuring early and complete emptying of the stomach so that hunger may be felt at the proper time.

In this regard it is important to avoid eating too much of foods which tend to remain too long in the stomach. In general, all those rich in fat pass out of the stomach slowly. All fried foods and nuts have this effect, and this is the principal physiologic reason for withholding them from a child's dietary.

Milk, innocent as it sounds, is one of the foods most slowly to be passed out of the stomach. Milk is a desirable food for all

children when appetites are good, but it is not sufficient as a complete diet after five or six months.

Since milk delays stomach emptying and interferes with the hunger mechanism which we are anxious to stimulate, I seriously question the advantage of pouring milk into unwilling eaters.

A long interval should always intervene between meals. In this way only can we be sure that hunger sensations will be keen. It is usually considered that five hours is the best interval between meals of a child over eighteen months of age. The mid-morning glass of milk so often given is a very bad thing for a child with a poor appetite.

Excessive amounts of sweets and starchy foods tends to destroy appetite.

Proteins, especially meats, are supposed to stimulate appetite. Broths and meat extractives particularly seem to possess this faculty and are therefore used in the first part of the meal.

Tonics, especially those containing biters, have been given from time immemorial to stimulate appetite. Carlson has demonstrated that these have no effect on hunger. Therefore, what effect they have must be directly on appetite. Clinically in children their use is disappointing. In general it may be said that tonics have been tried and found wanting.

Appetite In Physical Disease: Until now little has been said about the effect of disease on appetite. Acute and chronic disease is the most common cause of *temporary* loss of appetite. Because of this fact we shall see that it also plays an important role in the production of *habitual* lack of appetite.

Among the diseases directly causing temporary loss of appetite may be mentioned all acute and chronic infections of the nose, throat, and intestinal tract; organic disease of the heart, lungs and kidneys, tuberculosis, typhoid and imbecility.

It should be mentioned, however, that of all these conditions diseases of the nose and throat are overwhelmingly more important in causing poor appetites.

Many cases of poor appetite originate during illness when well meaning parents attempt to force food on the child when he has no appetite for food, and persists after the illness is over.

Prevention: The previous discussion of the nature of this problem and of its controlling factors naturally would be barren without some suggestions as to treatment and prevention. To my mind, and to that of most medical men, prevention of any disease is a more important subject than is the treatment of the established case. Particularly is this true of the appetite problem. If proper methods of prevention were generally used, I believe the problem would vanish into thin air with the expenditure of relatively little effort. *No child should ever be forced to eat.* I would rather have a child thin and happy over his meals than fat and unhappy or contentious three times a day. In starting any new food, give small amounts of it, and mix it with some food he likes.

Treatment of the first attack of anorexia is an important part of the prevention of habitual poor appetite and is almost always necessary during the first year. On the first attack of refusal of food, the amount should be reduced instead of increased, to allow him time to develop hunger which will stimulate appetite.

The Treatment Of The Established Case: Since successful treatment of the child with chronic lack of appetite is so difficult, emphasis up to this point has been laid on prevention.

Treatment of established anorexia naturally divides itself into the management of children under and over one year of age. In the younger group we are dealing for the most part with children who eat mainly under the stimulus of hunger. As they get older and certainly after the first year, appetite takes on the leading role in establishing the amount of food to be eaten.

It is much easier to be successful in treating infants under one year of age. They have not been feeding problems so long and, therefore, the psychologic influences at work have not grooved their minds so deeply.

The keynote of treatment at this age is *reduction of food*, either in the elimination of a specifically incompatible food or in a decrease of the entire dietary.

Treatment Of The Child Above One Year Of Age: No case of anorexia should be treated in any way until a thorough history has been taken and a physical examin-

ation made. If a physical defect is found which is considered adequate to diminish appetite, this should of course be treated at once. Poor appetite should not be considered an indication for taking out tonsils and adenoids simply because they are present. In my experience no permanent relief of the symptom may be expected to result unless there is evidence, either in the appearance of the tonsils or in the history of the case, that they are diseased. Children need plenty of exercise and sleep. Neglect in these matters may in exceptional cases cause trouble. After strenuous play it is well to allow a few minutes of rest before the meal is announced.

The diet should, in general, be a rather low caloric diet, especially poor in fat content. I have seen more immediate and brilliant results follow the reduction or elimination of milk from the diet than from any other dietary measure.

Constipation, while a rare sole cause of anorexia, may be a frequent contributory one.

Psychologic Treatment: I wish I had space to go into a discussion of child psychology, but we can mention a few things.

Negativism is a frequent cause of poor eating habits. This type of child does not like to do anything he is made or requested to do. The obvious way to get results in such child is to tell him he must not eat so much.

What tricks can we play on the child to make him realize the desirability of eating? Reduction of all portions to a ridiculous minimum with refusal of second helpings is often successful. Another is the restriction of some desired food, as milk. Taking food away from him is another. Limiting the time to be spent at the table sometimes helps.

Similarly an alarm clock may help. Set the stage so that there is nothing and no one in the room except the table, chair, all courses of the meal, and an alarm clock set for ten or fifteen minutes. Seat the child at the table and leave. On no condition enter the room until the bell rings, then go briskly, remove the dishes and send the child out to play or to bed with no comment whatever about the meal. Actions always speak louder than words, especially to children. Not only must we stop forcing food

upon them but we should apply some of these definite measures to show them the difficulty of getting food.

In order to produce a cure in the child who uses refusal of food as a means of becoming *important*, it is also possible to take advantage of the very factor which causes the difficulty. When he does eat, make him so important that eating is a real incentive. Pay no attention to poor eating.

Where a child definitely tries to *obtain favors* by rewarding us with eating, where he holds the "big stick" of refusal over our heads, the rational course to pursue is to show him that it does not work. Let him clearly understand that you do not care whether or not he ever eats another mouthful. It is a small matter in your life. In this method of treatment he not only gets no favors but he loses his liberty. The incentive for refusal is removed.

Of course, we have special diets constructed along lines which greatly help but without some knowledge of child psychology and unless some of the ideas mentioned here are adhered to, the diet will be of little avail. A combination of the two with an intelligent application of both seems to be the happy medium.

REFERENCE

Cultivating the Child's Appetite: C. A. Aldrich, The MacMillan Co., New York.

EPITHELIOMA OF THE FACE*

C. O. KING, M. D.
Birmingham

With a strange but distinctly and truly human perversity, the epitheliomatous eruptions of the skin of the face have in many instances been taken for warts, granulomas, herpes, and syphilis. In a differential diagnosis epithelioma should be one of the first conditions to be considered. Much caution should be exercised in making a final commitment, even after a thorough study of the case.

When one considers that epithelial growths of the skin, both benign and malignant, are so common, that they are easily diagnosed, that the tissue from them is readily obtainable for histologic study and that most of them are so amenable to treat-

*Read before the Association in annual session, Mobile, April 21, 1932.

ment, it is surprising how much ignorance prevails concerning them, even among surgeons and dermatologists. Bloodgood has done much to correlate the clinical and pathological findings and to show how these different findings influence treatment.

In 1887, Sir James Paget said, "the definition of cancer is impossible. Definitions are mere helps for arrangements and belong only to science more exact than pathology. It is better to think of disease as in groups with borders that are not clearly marked or as nations with ill-defined frontiers and with inhabitants intermingling and intermarrying, and to-day pathology is still a very inexact science." Opinions of equally capable pathologists differ with regard to the pathogenesis and classification of many tumors.

Practically speaking, 70% of all epitheliomas develop on the face and the remaining 30% on various parts of the body. Of the 70% occurring on the face, 20% occur on the lips, 16% on the nose, 13% on or around the eyelids and the balance on the ear, forehead, cheek and a small percentage on the tongue and buccal walls.

TYPES

Three distinct types are recognized by most authorities: basal cell, squamous cell and baso-squamous or transitional. The basal cell epithelioma or rodent ulcer is a chronic, relatively slowly progressing ulcer which usually develops anywhere on the face, nose, neck or ear and begins as a small flat papule or small warty growth and remains in that condition a long time. Eventually it breaks down into an ulcer, which enlarges until it may eat off a large part of the affected part. The ulcer as a rule is shallow but occasionally it eats deeply until it reaches the bone or deep fascia, where it is checked for an indefinite time. Finally it destroys these deeper structures. From the beginning, on close observation, a characteristic, definite, pearly, rolled border can be detected. This is very diagnostic, after the ulcer edge is thickened and indurated, the center secreting a glary liquid that crusts and becomes a black or brown crust or scab, which usually has a clear base under it when removed. Sometimes there is a drop of pus under the crust. Again, the ulcer may be raised above the

surrounding skin, soft and spongy, and reddish or brown in color.

The squamous cell epithelioma differs from the basal in that it is far more malignant and metastasizes early into the lymph channels. One type of squamous cell epithelioma appears as a warty growth and slowly enlarges at the edges, later spreading and ulcerating. This type frequently starts on the mucous membrane or the site of a scar or verruca and is likely to be papillomatous or fungating. If ulcerated, the edges are undermining and the depth and induration deeper. The other type begins as a depression, which early becomes fixed to the underlying tissues and ulcerates early into the lymphatics.

Montgomery says that basal cell epithelioma is not a morphologically closed entity but may through metamorphosis become a basal-squamous (transitional) or even a squamous cell epithelioma at any time. Moreover, he found transitional epithelioma, presenting features of both basal and squamous cell epitheliomas, in 12% of a series of 119 cases of epithelioma of the skin. A positive diagnosis can be made by microscopic examination only. The dangers of biopsies have been much overestimated in the past.

Most, if not all, metastatic basal cell epithelioma on microscopic examination will prove to be squamous cell or baso-squamous cell epitheliomas. Stewart Way has said that an epithelioma may be said to be benign when it is entirely surrounded by a dense thick network of lattice fibers, provided that the cancer cells do not penetrate into the surrounding fibers and there is a definite line of demarcation. An epithelioma may be said to be malignant when the lattice fibers surrounding the cancerous growth are few or practically absent and when, instead of showing a sharp line of demarcation between the two, the cancer cells penetrate into the bordering lattice fibers.

ETIOLOGY

Males are more prone to the development of epithelioma than females, the ratio being four to one. Blondes are especially liable, and dark skins are relatively free. From the time of the earliest medical writings to those of the present day, cancer has been defined and discussed as

a disease of middle or late life. Malignant disease is likely to be excluded from the realm of probability when a patient gives his age as twenty-five or less. Especially is this true of epithelioma, that is, those forms of neoplasm from epithelial structure in contradistinction to those of connective tissue origin, the sarcomata. The youngest patient mentioned in the literature with squamous cell epithelioma was a boy 14, reported by Stephens. The tumor appeared two years previously and recurred as a hard fungating cancer, with metastasis in the neighboring nodes.

Hazen has found but four cases in the negro race. Negroes very infrequently have senile keratosis, which is a very frequent precancerous condition. Lain has never seen an epithelioma in an Indian. Etiology and occupation are often intimately bound up in the causation of epithelioma. Injuries of various kinds, such as the rubbing of a jagged tooth, or a dental plate, bruises or anything that will cause a repeated injury to the tissues may be factors. The tearing off of mucous membrane by smokers, who allow the cigarette paper to stick, the heat and the mechanical irritation of a pipe stem, burns, and cuts are exciting elements.

Epithelioma may arise from any of the common dermatoses, as senile keratoses, warts, seborrheic keratoses, leukoplakia, psoriasis, papillomas or cutaneous horns. It has long been known that prickle cell cancer may develop in the scar of burns, injuries, syphilis, and tuberculosis. I have recently seen two cases that developed in a vaccination scar. The scar itself represents a past process. Any unhealed ulcer that remains an open sore for a considerable time may become the seat of a cancer, as cracks in lips. Substances that may lead to conditions favoring carcinomatous degeneration of the skin are tar, pitch, soot, paraffin, aniline dyes, arsenic, and tobacco. Ross claims that mechanical injury plays very little part, that chemical injury is responsible. Tobacco is without doubt partly responsible for the epidermoid growths on the lower lip as is evidenced by sex incidence. In this regard, figures for the rising generation will be watched with great interest. Exposure to sunlight and weather has a marked bearing. The occupation

of the farmer is the most hazardous from this standpoint.

Early workers in roentgen ray, especially in the medical fields, before protection was understood or developed, fell victim to radiant energy. The sequence has been burns, followed by dermatitis, keratoses, ulcers, carcinoma and metastasis. Repeated small doses daily acted on the damaged skin to bring about the ultimate result. Burrows has written several extensive articles on the relation of cancers of the skin to focal lesions in other ectodermal structures. He claims that he has seen several skin cancers and breast metastases disappear after removal of diseased teeth. He claims to have found lesions in the teeth in every case except one breast cancer.

Bloodgood is responsible for the statement that he has never seen an epithelioma develop in a normal skin and practically every writer supports this observation.

The growth, spread and life history of the three main classes of cancer of the face are quite different. It depends on the pathology as to the type. The squamous cancer cells break through the basement membrane early and enter the lymph vessels by which they are carried to the regional lymph nodes. From these nodes the cells may enter the blood stream and be deposited in any part of the body. The size of the primary lesion makes very little difference. Basal cell epithelioma almost always occurs above a line drawn from the angle of the mouth to the upper border of the pinna of the ear. However we must never forget that rapidly growing lesions in this region may be squamous or transitional which do metastasize in the cervical lymph nodes.

DIFFERENTIAL DIAGNOSIS

Syphilis: A primary extra-genital chancre must always be thought of when the patient is young and has a rapidly developing hard nodule that may ulcerate and involve regional glands. It is more frequently necessary to differentiate chancre from squamous than from basal cell epithelioma. Examination of scrapings under a dark field microscopically may be of value and should always be carefully done. Tertiary syphilis may closely simulate a rodent ulcer. Usually other signs of syphilis may be present but these failing the character of ulceration, the tendency to inflam-

mation about the edge, as well as the absence of pearly nodules and induration, presence of other scars in the vicinity and the history of painful progress, may be of assistance. Blood Wassermann should always be made. Tissue examination microscopically or therapeutic administration of antisyphilitic remedies will often decide the question.

Lupus vulgaris can be differentiated because of its origin in a young person, usually a female. The irregular outline, with occasionally healed scars and overhanging edges of the ulcer, and apple jelly nodules, by pressure with glass, assist in the differentiation.

Lupus erythematosus, granuloma pyogenicum blastomycosis, morphea and simple inflammations should always be considered.

TREATMENT

Prophylaxis is of the greatest importance and much can be done to prevent the development by attention to precancerous dermatoses. There are many roads that lead to Rome; this is an old saying and very true. It may be used in almost every phase of life, certainly in medicine, for there are many and various methods of therapy, all of which, in the hands of reliable men, may give satisfactory results. The roads to be traveled in the treatment of cancer, wherever it be located, are several in number. The most successful at present are radiation and surgery. Radium and roentgen ray are the important standard methods of the first, yet the galvanocautery, endotherm knife, electrocoagulation and the actual cautery may be used in certain cases for the destruction and removal of the lesion. In treating any epithelioma, the problem is essentially not the agent one uses, but the use of the agent which will completely destroy the growth.

There is probably no better method than the x-ray in selected cases, but if the lesion does not respond to a dose that is safe and sane, it is much better to resort to some other method or a combination of methods. The results are equally favorable with either roentgen ray or radium; there is very little difference in the action. The selection of one over the other is merely a matter of convenience as far as the location of the area to be treated is concerned. Radium can at times be applied more accurately,

ly, thus assuring an equality of radiation, especially in such locations as the inner canthus of the eye, where the x-ray treats the high points more intensely than the growth. Small apertures like the nostril or external auditory canal also are readily treated by radium and with difficulty with roentgen ray. A cross fire effect on growths on the nose can be obtained by the use of radium in the nostril and roentgen ray externally. The patient is spared the noise of the machine and the dimly lighted depressing atmosphere of the average roentgen ray room; and when the radium is once in place, there is no necessity of remaining in a fixed position. The time may be passed pleasantly reading or talking with friends. Occasionally a growth is found which is refractory to roentgen ray treatment and which yields readily to radium. The reverse is not true according to McKee. The roentgen ray can be used on the other hand to cover a more extensive area in a much shorter time. The two may be combined profitably occasionally, if careful attention be paid to dosage.

In very deep cases of ulceration, with sloughing and involvement of underlying cartilage and bone, any form of radiotherapy may have very little effect in some instances. Surgery remains as the method of choice. Eyelid cases are extremely difficult in some cases, also ear lesions, especially where there is cartilage involvement. It has been my routine to infiltrate the lesion to be treated with 2% novocaine solution, then electrocoagulate the lesion thoroughly, keeping in mind the size and depth of the lesion. Then give from two to three and a half units of unfiltered x-ray, screening from $\frac{1}{4}$ to $\frac{1}{2}$ inches with lead from the border of the lesion. Next, screen to the border of the lesion and give one unit of unfiltered roentgen ray. This is to be repeated in four to six weeks. In superficial growths no filter is used; in deeper ones filtration is necessary to get proper penetrated rays into the tissues and to cut out the longer, more caustic rays, which cause burns.

The disadvantage of radium therapy to be considered are acute radium dermatitis of severe grade, subsequent wrinkling and telangiectasia. In expert hands there is very little danger of radium dermatitis or its sequelae.

THE JOURNAL

OF THE

Medical Association of the State of Alabama

Editor-In-Chief

FRED W. WILKERSON.....Montgomery

Associate Editors

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J. N. BAKER.....Montgomery

DOUGLAS L. CANNON.....Montgomery

Office of Publication:

519 Dexter Avenue.....Montgomery, Ala

Subscription Price.....\$3.00 Per Year

February 1933

THE FORTHCOMING APRIL MEETING

It is not too soon for members to be seriously considering and planning for the forthcoming annual meeting of our Association which will be held in Montgomery, beginning Tuesday, April 18, and continuing throughout Friday.

It may well be that quite a number of our membership cannot, for varying reasons, find it convenient to be in attendance throughout the entire meeting; yet every alert physician should begin now to so shape up his schedule—obstetricians included—as to participate for one or more days in the splendid scientific program which has been arranged. The central location of Montgomery, coupled with its many highway and rail facilities, relegates to the background distances and the time element. The entertainment and arrangement committees—composed largely of Montgomery's more youthful and agile members—are seeing to it that the social and playful side shall not entirely be ignored; while a cursory glance at the scientific program, to appear in the March issue of the Journal, gives mute assurance of a sumptuous mental feast which has been carefully arranged by our President. He, realizing the urgency and importance of many of the economic and social problems now confronting both the profession and the public, has wisely planned to have these topics presented at the public meeting on Wednesday evening by two of America's most outstanding physicians—Dr. Dean Lewis, President-Elect of the American Medical Association; and Dr. Irvin Abell,

President of the Southern Medical Association. Dr. Lewis will deal with "Medical Problems Confronting the Medical Profession", and Dr. Abell's topic will be "Some Recent Contributions of Science to the Field of Medicine".

The President himself will see fit to devote the major portion of his address to a similar theme, viz: "The Contributions of Medicine to Civilization".

The Jerome Cochran Lecture will be delivered at 11 o'clock on Wednesday by Dr. J. Shelton Horsley, of Richmond, Virginia, one of the South's leading exponents in surgery and an ex-president of the Southern Medical Association.

Among other distinguished out-of-state visitors—with whom the program this year is unusually replete—are the following, who are personally known to many of the members of this Association:

Robert Carothers, Cincinnati.

Frank K. Boland, Atlanta.

R. E. Semmes, Memphis.

John J. Shea, Memphis.

Hugh J. Morgan, Nashville.

Fred W. Rankin, Lexington, Kentucky.

R. Wesley Scott, Cleveland.

A further study of the program reveals also that much excellent "home talent" has been commandeered in an effort to make this occasion one of exceptional interest and service to the profession. Let no member fail to participate and to partake.

PRACTICAL APPLICATIONS OF NEW KNOWLEDGE OF ANTIGENS

There have been more additions to our knowledge of the fundamental nature of antigens and their action in the past decade than at any time since the beginning of bacteriology as a science. The chief lines of attack which have resulted in our present conceptions of the antigenic structure of bacteria have been the following: (1) the demonstration of the importance of the structure of the protein molecule in relation to antigenic specificity—even very slight alterations in spatial relationships being sufficient to effect a complete change in antigenic activity; (2) the discovery of the specific polysaccharides responsible for antigenic specificity and, as a corollary of this, the study of partial antigens or haptenes and the elaboration of these into complete antigens; (3) qualitative receptor

analysis and the double reactor hypothesis of Weil and Felix; (4) the differentiation, in the case of motile bacteria, of the flagellar and the somatic antigens; (5) the rapidly accumulating observations on bacterial dissociation or variation and the profound effect of this phenomenon on antigenic constitution.

The bacterial cell is a complex antigenic structure. It is not a simple unit like such antigens as purified proteins or even bacterial toxins. This is not surprising; in fact it is the logical predicate, when we remember that we are dealing with a living cell capable of metabolism, multiplication and the other functions of living matter. All bacteria contain a carbohydrate component and it is this fraction which gives type specificity. The nucleoprotein determines species specificity but not type specificity. The same nucleoprotein is common to all pneumococci but the polysaccharide of each type is different. The so-called rough variant differs from the normal smooth form in that the former lacks this type-specific portion and is, furthermore, avirulent. Pneumococci originally of one type can be changed into another by growing the rough variant in the presence of the specific polysaccharide of the other type. This observation has been confirmed repeatedly and throws light on the origin of antigenic types.

Rough variants may differ antigenically in other respects than in this deficiency of specific carbohydrate. The serum of an animal immunized against a rough strain of the typhoid bacillus is not bactericidal for smooth strains. The culture in wide use in the preparation of typhoid vaccine is a rough variant and is, therefore, not such a good immunizing agent; consequently, most laboratories are changing to the use of a smooth strain for use in vaccines.

Motile organisms possess flagella which have a different antigenic composition from the bodies. The flagella, so far as is known, do not enter into the development of immunity, non-motile cultures being as effective for this purpose as are motile ones. The flagella do, however, contribute a major factor in the determination of the serologic type and in serologic methods of identification. Thus, for example, the somatic portion of *B. typhosus* is so similar to that of *S. enteritidis* that non-motile strains of

these two organisms cannot be distinguished. It is only by the use of a diagnostic serum which contains flagellar antibodies that differentiation can be accomplished.

Another characteristic of some bacteria is that they differ not in the kind of antigenic substances present but in the relative proportions; that is, the differences are not qualitative, as in the pneumococcus types, for example, but are quantitative, one species containing less of one antigenic component than another. The *Brucella* group is a good illustration of this kind; each member of the group contains two demonstrable constituents which may be designated as M and A. *Br. melitensis* contains a large amount of M and a small amount of A, while *Br. abortus* contains only a small amount of M but a relatively large content of A. The porcine variety differs by containing about equal amounts of both.

All strains of rabies virus are not antigenically identical. Studies in the laboratories of the Alabama State Department of Health have shown that rabbits immune to one strain may be infected with another, unless the immunizing process has been prolonged and a large number of injections of the vaccine given. This difference between strains of the virus has been shown to be due to the same sort of composition as in the *Brucella* organisms. Fixed virus which is used for making rabies vaccine contains only minimal amounts of some components which are present as the major constituent in many strains of street virus. It is, therefore, necessary to give a relatively large number of injections of the fixed virus to insure an appreciable immunity against exposure to these strains. There is thus established a rational basis for the practice of 14-21 daily injections of rabies vaccine. While a smaller number of doses would probably be sufficient to protect against those strains which are similar to the fixed virus in their antigenic make-up, there would probably not be sufficient immunity established to furnish protection against other strains which contain a large amount of those components in which the vaccine is deficient. "The magic prism of investigation is always splitting up apparent entities into an increasing number of new elements." L. C. H.

THE ASSOCIATION FORUM

(Under this heading will appear, from time to time, as occasion may arise, contributions having a direct bearing on the general policies, functions and interests of the Association. Articles submitted should be of an impersonal nature.)

THE COLLEGE OF COUNSELLORS AND THE PROPOSED AMENDMENT

J. N. BAKER, M. D.

Life Counsellor of the Medical Association of the
State of Alabama

At the last meeting of the Association held in Mobile, the following amendment to the Constitution was introduced, seeking to enlarge the membership in the College of Counsellors:

WHEREAS, Inequalities and injustices in the apportionment of the Counsellors of the Medical Association of the State of Alabama have gradually developed until three counties have a preponderance, or at least the balance of power, in the voting strength of the Association, thus enabling them to dominate the policies and name the officers of the Association, and

WHEREAS, These three counties have more Counsellors than there are in forty-five other counties in the State, thus discriminating against the rural counties, and

WHEREAS, As evidence of this discrimination against the smaller counties, these three counties now have six members of the Board of Censors, thus having a majority on this Board, while sixty-four counties have four members, and

WHEREAS, In no other State Medical Association in the United States does one Congressional District have more Counsellors than another, so that in other states the cities cannot control the State Association; thus, the County of Fulton, (Atlanta, Georgia) has nine votes (1 counsellor and 8 delegates) in the Georgia State Medical Association, while one of these Alabama counties has thirty-three votes in the Alabama State Medical Association; therefore be it

Resolved, That Article VI, Section 7, of the Constitution of the Medical Association of the State of Alabama, where it reads "*The total number of active Counsellors and Counsellors-elect, at any one time shall not exceed 100*" be changed so as to read "*The total number of active Counsellors and Counsellors-elect at any one time shall not exceed 180; and be it further*

Resolved, That Section 10 of the same article (VI) be changed to read as follows: The nominees must be so distributed among the Congressional Districts of this State as to make the number of Counsellors from each district twenty, due and proper regard being had to the qualifications for the position of Counsellors prescribed in the preceding section.

The first error into which the author of this proposed amendment to our Constitu-

tion slips, is common to many members of this organization who view it solely in the light of a scientific body. All other state medical societies or associations, except Alabama's, have a striking similarity in organic structure, which have been designed for the purpose of caring for the needs of scientific medical groups in the various states. This common plan of organization came into being during the earlier years of the present century, upon the recommendation of the American Medical Association and to meet an urgent demand for uniformity in design. This so-called "model plan", which now prevails in practically all the states, including Georgia, to which reference is made in the resolution, provides for two factors quite necessary for the smooth functioning of any large group. These are:

(a) A *House of Delegates* or *Legislative Body*, with representation according to membership from the various county medical societies; and

(b) A *Council*, or *Deliberative Body*, or *Standing Committee*, with a membership ranging usually from six to twelve and representing the various political subdivisions of the State. The former or legislative body is entirely comparable to Alabama's House of Delegates in which each county is represented by a minimum of two delegates; whereas the latter—the *Council*, or *Deliberative Body*—coincides with our *State Board of Censors*, and not at all with our *College of Counsellors*. Here the similarity of structure as well as similarity of function between Alabama's organization and that of other states ends. No fair comparison can be made between the *College of Counsellors*, provided for in Alabama's scheme, and other state organizations, for the reason that no such group elsewhere exists. Its existence finds justification because of the marked differences in function to be seen between our organization and that of other states. The functions exercised by other state medical societies are limited exclusively to its own membership and carry no legal responsibility whatsoever.

ever; whereas Alabama's State Medical Association is, *by law*, constituted the State Board of Health, and, consequently and immediately, takes on very vital and important legal functions to be performed for the State. In short, it constitutes one of the important arms of the State government.

The effort made, therefore, in this amendatory resolution, to draw comparison between the "Council" or Standing Committee, of other state medical societies, and the "College of Counsellors" now existing in Alabama's organization can hardly find justification in the light of the above facts.

The second error into which the author of this resolution falls, is the failure to properly grasp the significance and importance of our "House of Delegates" which is, and was designed to be, the truly *representative part of our bi-cameral legislative body for the component county medical societies in all of their legislative liberations*. Our Constitution fixes—and it was never the intent for it to be otherwise—that this representation, coming each year fresh from the various counties, *shall be in the majority and shall possess the balance of power in voting strength*. The potential voting strength of the House of Delegates is now 143; that of the College of Counsellors, as originally planned, and of the now existing "Active Counsellors" is 100. The group known as "Life Counsellors" is a "by-product" and represents the accumulation of years for service faithfully and long performed, and now numbers 39. That is to say, the total voting strength of the College of Counsellors is 139. One sees at a glance, therefore, that if some measures are not devised for curtailing the voting strength of this particular group, the "balance of power", designed by constitutional intent to reside in the House of Delegates will be destroyed and thrown into the College of Counsellors—the group in which is lodged the *permanent voting strength* of this organization. This should never be done through deliberate intent, as would be the case, should this amendment prevail, and must not be permitted to come to pass through slow and insidious growth in the "Life Counsellors". The real problem confronting our organization is not one of devising methods for enlarging the "Col-

lege", but rather of so curbing the voting strength of the "Life Counsellors" as not to destroy this legislative equilibrium provided for in our Constitution. The Constitution of our Association—quite unlike those of other state medical associations—logically and concisely provides for a legislative body composed of two distinct parts: (a) *The House of Delegates, a changing, varying body*, elected by and speaking the wishes of the component medical societies, and *designed to be always in the majority*; and, (b) *The College of Counsellors, a permanent body*, whose members are *elected by the Association, and designed to be always in the minority*.

This proposed amendment seeks to enlarge the membership of this *permanent body*, the *College of Counsellors* by eighty (80), thereby immediately and effectually destroying a basic and democratic principle incorporated into the Constitution of this Association. Consequently, in the absence of more cogent and valid reasons than now appear, the Association could ill afford to adopt the suggestions carried in this amendment. In this connection the reader is referred to two articles bearing on the College of Counsellors and appearing in previous issues of the Journal; one for September, 1931, and one for April, 1932.

Another potent reason for not enlarging the membership in the College of Counsellors is the already large voting strength of our legislative body—282—in proportion to its membership—1491; one vote for every five members. Contrast this with the membership of the American Medical Association—100,000—and the potential voting strength in its House of Delegates, 133; or one vote for each 730 members. An even more vivid contrast is seen when one considers that the combined voting strength of both houses of our State Legislature—141—and representing two and two-thirds millions people, is less, by more than one hundred, than the potential voting strength within our organization. To swell an already large legislative body by nearly one third, as this amendment proposes, would tend, to say the least, to create a body so unwieldy as to materially hamper its efficiency. This argument need not be further expanded to show the unwisdom of such a procedure. In order to throw additional

light on the structure of the College of Counsellors and the purposes it was designed to serve, the appended tables and analyses should prove helpful. These should be studied in conjunction with Article VI of our Constitution (pages 13-18 of the Compend) which sets forth the duties, responsibilities and rights of Counsellors.

In conclusion, the writer will quote the closing paragraph previously used in an article setting forth reasons why our Constitution should not be unnecessarily altered.

“Preserve, with great zeal and care, this Constitution; into it are deep-set, like precious gems, the foundation stones upon which repose the glory, the grandeur and the practical achievements of this organization”.

Table 1

DISTRIBUTION OF MEMBERS, LIFE COUNSELLORS, ACTIVE COUNSELLORS AND DELEGATES BY COUNTIES, GROUPED ACCORDING TO CONGRESSIONAL DISTRICTS AS OF JANUARY 1, 1933

	Members	Life Counsellors	Active Counsellors	Delegates	Total Representation
1st District:					
Choctaw	11	0	1	2	3
Clarke	11	0	2	2	4
Marengo	10	0	1	2	3
Mobile	90	2	5	3	19
Monroe	16	0	0	2	2
Washington	5	0	0	2	2
Wilcox	10	0	1	2	3
2nd District:					
Baldwin	13	1	1	2	4
Butler	16	0	2	2	4
Conecuh	8	1	1	2	4
Covington	20	0	2	2	4
Crenshaw	12	0	1	2	3
Escambia	18	0	2	2	4
Lowndes	5	0	1	2	3
Montgomery	83	5	3	4	12
Pike	21	0	1	2	3
3rd District:					
Barbour	13	1	0	2	3
Bullock	8	0	0	2	2
Coffee	17	0	1	2	3
Dale	10	0	1	2	3
Geneva	17	0	2	2	4
Henry	9	0	1	2	3
Houston	27	2	1	2	5
Lee	18	0	1	2	3
Macon	10	0	1	2	3
Russell	4	0	2	2	4
4th District:					
Autauga	6	1	2	2	5
Calhoun	38	0	3	2	5
Clay	8	0	1	2	3
Coosa	4	0	0	2	2
Dallas	39	1	1	3	5
Elmore	16	1	0	2	3
St. Clair	11	1	0	2	3
Talladega	21	1	2	2	5
5th District:					
Chambers	16	0	0	2	2
Cherokee	5	1	1	2	4
Cleburne	3	0	0	2	2
DeKalb	15	0	1	2	3
Etowah	44	2	2	2	6
Marshall	15	0	1	2	3
Randolph	11	0	0	2	2
Tallapoosa	15	0	3	2	5
6th District:					
Bibb	13	1	1	2	4
Chilton	10	0	2	2	4
Greene	5	1	0	2	3

TABLE 1—Continued

	Members	Life Counsellors	Active Counsellors	Delegates	Total Representation
Hale	7	0	0	2	2
Perry	7	0	1	2	3
Shelby	16	1	1	2	4
Sumter	12	1	1	2	4
Tuscaloosa	45	1	4	2	7
7th District:					
Blount	12	0	1	2	3
Cullman	13	0	2	2	4
Fayette	7	0	2	2	4
Franklin	15	1	0	2	3
Lamar	13	0	1	2	3
Marion	11	0	1	2	3
Pickens	14	0	2	2	4
Walker	35	1	1	2	4
Winston	10	0	1	2	3
8th District:					
Colbert	18	1	2	2	5
Jackson	10	0	0	2	2
Lauderdale	22	0	1	2	3
Lawrence	10	0	1	2	3
Limestone	10	0	2	2	4
Madison	26	1	2	2	5
Morgan	29	2	1	2	5
9th District:					
Jefferson	372	8	19	7	33
Total	1491	39	100	143	282

Table 2

DISTRIBUTION OF TOTAL POPULATION, PHYSICIANS, LIFE COUNSELLORS, ACTIVE COUNSELLORS, AND DELEGATES BY CONGRESSIONAL DISTRICTS AS OF JANUARY 1, 1933

District	Total Population	Physicians (Members)	Life Counsellors	Active Counsellors	Total Counsellors	Delegates	Total Representation
1	272,633	153	2	10	12	15	27
2	330,677	196	7	14	21	20	42
3	297,574	133	3	10	13	20	33
4	264,658	143	5	9	14	17	31
5	273,763	124	3	8	11	16	27
6	263,412	115	5	10	15	16	31
7	256,797	130	2	11	13	18	31
8	282,241	125	4	9	13	14	27
9	431,493	372	8	19	27	7	34
Totals	2,646,248	1491	39	100	139	143	282

The Constitution of the Association (Art. VI, Section 10) provides that “the nominees (for active counsellorship) must be distributed among the congressional districts as to make the counsellors (active) in the several districts bear approximately a uniform proportion to the aggregate number of members of county medical societies in the respective districts.”

Applying this provision to the above tabulation it is noted that:

- District 1 has its quota of active counsellors.
- District 2 has one more than its quota.
- District 3 has one more than its quota.
- District 4 has one less than its quota.
- District 5 has its quota.
- District 6 has two more than its quota.
- District 7 has two more than its quota.
- District 8 has one more than its quota.
- District 9 has six less than its quota.

To complete the picture reference may be made to an ordinance of the Association (page 59 of the Compend) which reads as follows:

"Be it ordained by the Medical Association of Alabama, That whenever the transfer of a counsellor to the roll of life counsellor is made, or whenever a counsellor is dropped from the roll from any cause, the vacancy shall be filled as follows:

1. If the district in which the vacancy occurs is left with a less number of counsellors than that to which it is entitled, the vacancy shall be filled from the said district.

2. If the district from which the counsellor is dropped should still have the number to which it is entitled, the Board of Censors shall designate which district shall have the privilege of selecting a counsellor to fill the vacancy.

3. That when it becomes the duty of the board to apportion counsellors they shall be distributed among those districts in which the greater number of vacancies exist."

DEPARTMENT OF PUBLIC HEALTH

BUREAU OF ADMINISTRATION

J. N. Baker, M. D.
State Health Officer in Charge

DISCRIMINATORY INSURANCE POLICIES

At the recent meeting in Birmingham of the National Malaria Committee, the subcommittee on resolutions submitted the following resolution which was unanimously adopted by the committee:

WHEREAS, It has been the practice of certain insurance companies soliciting the sale of their policies among the general public to exempt deaths due to certain diseases from the provisions of said contracts, and,

WHEREAS, Such practice tends to vitiate the real value of mortality statistics compiled from such sources, and

WHEREAS, Many diagnoses as to the actual cause of death are necessarily more or less vague and uncertain, and,

WHEREAS, Such a condition might tend to influence the physician certifying to the real cause of death to subordinate the primary or chief cause to the secondary or contributing cause; therefore be it

Resolved, That it is the sense of the members of the National Malaria Committee in regular session assembled in Birmingham, Alabama, November 17, 1932, that the legislature in each state be urged to enact such legislation as will debar the sale of any insurance policy which exempts specific causes of death from the provisions of such policy.

The importance of this question is so great that it is to be sincerely hoped that in the near future all Southern States can secure this change.

The malaria control program of the Alabama State Department of Health recognizes that without accurate and complete diagnosis of cases of malaria by the physicians and their prompt reporting by name and location, there can be no hope of successful application of control measures. It is no less important that only accurate causes of death appear on death certificates

in Alabama. This consideration is of particular significance with respect to malaria because of the fact that the malaria death rate is looked upon as an important indication of the desirability of a location for residence or industrial operations.

The practicing physician is often confronted with the dilemma of vitiating the financial interests of the family of a deceased person whose life insurance policy excludes deaths of tuberculosis and syphilitic persons from benefits under the policy, or of vitiating the statistical accuracy and value of the record of death by certifying malaria as the primary cause of death when his better judgment recognizes that it at most was only contributory.

The soundness of life insurance as a means of protection and retirement income has been amply justified in the past few trying years and the fact that insurance practices are safeguarded by strict control legislation in most of the states is a legitimate reason for satisfaction; but that this flaw exists in the insurance field is a challenge to the law-maker, as well as to the insurance company, and the medical profession.

If the unrecognized incidence of tuberculosis and syphilis works a hardship upon insurance companies—and there can be little doubt that they do work such a hardship—it would seem that a better point of attacking this problem would be the requirement of more complete laboratory tests for these diseases in all life insurance examinations. Surely there can be no justification for further victimizing the family of the deceased, who has himself already been victimized by an unrecognized, though deadly, disease.

It appears no less obvious that there can be no justification for vitiating the statis-

tical value of records of death by confusing the issue or resorting to a vague or indeterminate classification of these causes of death. It would seem, therefore, that the best method of correcting this unsatisfactory feature in certain life insurance policies is by prompt and adequate legislation regulating the issuance of such policies by burial associations and fraternal orders, since these appear most frequently as the issuing agencies.

Such a control program can be made effective only by the conscientious cooperation and absolute integrity of the medical profession in certification of the causes of death.

BUREAUS OF LABORATORIES AND PREVENTABLE DISEASES

L. C. Havens and D. G. Gill, Directors, Respectively

A STUDY OF THE VALUE OF A SINGLE INJECTION OF PRECIPITATED TOXOID IN THE CONTROL OF DIPHTHERIA

Wells, Graham and Havens¹, in a preliminary report, have described the precipitation of diphtheria toxoid with aluminum-potassium sulphate, following the method of Glenny and Barr². Its immunizing properties for guinea pigs and children were also discussed. The toxoid was practically completely precipitated as shown by negative flocculation tests with the supernatant fluid and by flocculation of the re-dissolved precipitate. There was an average decrease in the total nitrogen of about 70%. The loss of specific antigen in the process, as compared with the original toxoid, was about 20-30%, the loss being roughly parallel to the decrease in total nitrogen. The amount of alum required for complete precipitation was found to be about 2.0-2.5%.

When the alum solution is added to the toxoid a coarse, flocculent precipitate forms immediately; this settles in a few hours, leaving a clear supernatant which is siphoned off and an amount of 0.85% NaCl solution is then added to bring the suspension to the original volume of the whole toxoid. After vigorous shaking the precipitate is allowed to settle again, the supernatant is again siphoned off and an

equal volume of normal salt solution is added.

It is apparent that the precipitated toxoid stimulates a far greater production of antitoxin in the guinea pig than does the untreated toxoid. A single injection of 5-10 units of the alum precipitate regularly resulted in a production of sufficient antitoxin to protect against 50 M. L. D. of toxin injected subcutaneously 4 weeks later. Five units of lot 50 protected 25 pigs against from 100-250 M. L. D. and 5 pigs tested with as much as 450 M. L. D. all survived. Two pigs which received only 1 unit of lot 54 resisted 5 M. L. D. of toxin. None of the pigs showed any evidence of diphtheria intoxication, either locally, at the site of injection, or general, as evidenced by the fact that none lost weight.

A total of 797 children have been given a single injection of the alum precipitated toxoid. These may be divided for purposes of discussion into three groups. Groups I and II consisted of children of school age who were found to be strongly Schick positive and who were retested from 2-6 months after the single dose of toxoid. Group I received toxoid containing 10 units per cc., while Group II received toxoid containing 5 units per cc. Group III consisted of children who were given the one injection of toxoid (either 5 or 10 units) without a preliminary Schick test, but who were tested 2-4 months later. Of the 613 children, 444 were in the age group 0-6.

Results appear in the accompanying table. Reactions, on the whole, either local or general, were no greater or more frequent than would be expected from ordinary toxoid in similar groups.

IMMUNITY STATUS OF 797 CHILDREN FOLLOWING A SINGLE INJECTION OF PRECIPITATED TOXOID

Group	No. Children	Original Schick	Toxoid	Re-Schick	% Negative
I	99	All Positive	1 cc. 10 units	6	93 93.9
II	86	All Positive	1 cc. 5 units	8	78 90.7
I & II	185	All Positive	1 cc. (5-10 units)	14	171 92.4
III	613	Unknown	1 cc. (5-10 units)	21	592 96.57

The results of a single injection in children are fully as good as two or three injections of the best unprecipitated toxoid. The group of children who are known to have been strongly Schick-positive prior to the injection of toxoid yielded 92.4% completely Schick-negative results from 2-6 months

1. Am. J. Pub. Health 22: 648-650, June '32.

2. J. Path. and Bac. 34: 131-138, March '31.

later. While the immunity status of Group III was not known before the administration of the toxoid, the important fact, from the practical standpoint of mass immunization against diphtheria, is that one may expect at least 95% immunity following a single injection. The effect in accelerating the prevention of diphtheria by mass immunization is obvious.

It seems plausible to explain the effectiveness, as an immunizing agent, of the precipitated toxoid on the basis of its relative insolubility. It is absorbed slowly, less antigen is lost by rapid excretion, and there is a consequent prolonged antigenic stimulation. Soluble toxoid, on the other hand, as Glenny, Buttle and Stevens have shown, is excreted rapidly and there is only a transient stimulus to antitoxin production. These investigators conclude that, while part of the increased effectiveness may be due to local damage of the tissues by the alum, the chief factor is the slow, gradual absorption of the toxoid over a comparatively long period of time, with a resultant increased duration of exposure of the tissues to the specific antigen.

Diphtheria toxoid precipitated with alum is now available for use in further studies by physicians and health officers. The State Board of Health has authorized its use in those instances where the necessary records will be obtained and furnished to the Health Department, in order to evaluate the effectiveness of the method. The necessary data include age, race, and sex of each individual, and the result of a Schick test six to eight weeks after the injection. A Schick test is desirable prior to the injection of toxoid wherever possible. The toxoid, Schick toxin and record forms may be obtained upon application to the Bureau of Preventable Diseases or the Bureau of Laboratories of the State Department of Health.

BUREAU OF VITAL STATISTICS

W. T. Fales, Director

MEDICAL CERTIFICATION OF CAUSE OF DEATH

The importance of the medical certification of causes of death cannot be overemphasized. In order that the physicians may properly perform this quasi-public duty, it

is necessary that the physician have a clear understanding of just what is expected of him.

In the first place, the law provides that the undertaker, or in the absence of an undertaker, the family, shall file the report of the death with the local registrar of the district in which the death takes place. It is necessary that this should be done before the burial in order that this certificate may be the basis of the burial permit.

The last attending physician is required to fill out and sign the medical portion of the death certificate and in filling this out, he should consider two points: (a) the legal aspects, and (b) the scientific or sanitary aspects.

From a legal point of view, it would seem obvious that a physician would not put his signature to a document certifying to the death of an individual unless he is in a position to know that the person is dead; yet this has been done in the past, perhaps because the physician thought that by so doing he was facilitating the reporting of a death that might not otherwise have been reported. However, by so doing he has made possible the placing in the archives of the Bureau of Vital Statistics a record of a death which may not have occurred.

The scientific statement of the cause of death, is, of course, of tremendous importance if our mortality statistics are to have scientific and sanitary significance. It is well recognized that there is a large discrepancy between the medical conclusions from clinical observations and autopsy findings. On the other hand, these discrepancies do, by no means, wipe out the value of clinical observations, but only mean the necessity of critical judgment in drawing conclusions therefrom. In the same way, the fact that our certifications of causes of death are in many instances in error does not destroy their value as a group. As in all biological phenomena, we have the factor of error and variation which it is our duty to minimize and study, and which, when carefully done, will lead to a better understanding of the forces of mortality which govern the length of life of man.

The medical portion of the death certificate is divided into several parts:

- (a) The date of death.
- (b) Certification of attendant.

- (c) The principal and contributory causes of death.
- (d) Additional questions relative to the diagnosis or postmortem findings.
- (e) Special section for deaths from violence.
- (f) Physician's signature.

The first two items establish the date of death and the right of the physician to certify the cause of death. What form the statement of cause of death should take has been a moot question for years. It is recognized that the statement must be brief and clear. At the same time, English and American experience has shown that unless the physician is encouraged to put down all the conditions which he feels were of importance in causing the death, it is impossible to work out a satisfactory classification of the certificates after they have been received by the central registration office.

In 1929 the U. S. Bureau of the Census adopted for the standard certificate of death a new wording calling for the principal cause and related causes of importance, and, secondly, contributory causes of importance not related to the principal cause. An example of such entries is given below:

The principal cause of death and related causes of importance in order of onset were as follows:	Date of Onset
<i>Arteriosclerosis</i>	1915
<i>Chronic interstitial nephritis</i>	1921
<i>Cerebral hemorrhage</i>	July 5, 1927

It is recognized that in a population that is largely rural in character and composed of such a large percentage of colored population, there will be many deaths in rural districts in which there had been no recent medical attendant. The Bureau of Vital Statistics believes that the physicians of Alabama should take the following attitude towards the certificate of these deaths:

1. That the certificate should not be signed unless the physician has reliable information that the individual in question is dead.
2. That unless the individual had been seen recently the death should be certified

to as unknown unless the individual had been suffering from a chronic condition, which, in ordinary events, leads to death.

3. That when a physician finds he is not in a position to certify to the cause of death, he should explain to the party requesting the certification that he was not in attendance. If there was no other physician in attendance the local registrar has authority to issue the burial permit without the medical portion, provided that the death was from natural cause and not from violence.

It is the opinion of the Bureau of Vital Statistics that with a clear appreciation on the part of the physicians of the State as to the legal and sanitary certification of death, the accuracy of our vital statistics will be increased.

BUREAU OF CHILD HYGIENE AND
PUBLIC HEALTH NURSING

Jessie L. Marriner, Director

THE PUBLIC HEALTH NURSE AND
SANITATION

Because some of the county health units have sanitary officers, a few public health nurses have been inclined to think of the problem of sanitation as belonging solely to these men. But the thoughtful nurse has recognized that sanitation is a fundamental part of any health program, and that all her activities are correlated with it, and that any effort on the nurse's part that promotes sanitation affects the results gained in the activities supposed to belong peculiarly to her.

When sanitation is thought of as including all environmental improvements, proper disposal of excreta, screening, prevention of mosquito and fly breeding, assurance of safe milk and water supplies then the public health nurse readily sees that without sanitation she cannot advance very far with her maternal and infant hygiene and communicable disease prevention programs.

A study of the cases and deaths of intestinal disorders among infants is enough to convince the public health nurse that the sanitary conditions and the milk supplies of these homes should be inquired into.

The problem of effectively isolating tuberculosis and other communicable diseases always brings up the question of screening and excreta disposal. So the entire program can be said to move in a circle, beginning and ending with sanitation.

But what has the public health nurse to do with the actual sanitation of her county? She has a great deal to do with the promotion of such a program. It is she who goes into the homes to associate these conditions in the minds of the householders with problems of sanitation. She should be thoroughly conversant with every sanitation need of the county and the approved procedure of meeting these needs.

The sooner the members of the health unit overcome the feeling within themselves that the sanitary officer has a program which is unrelated to the general activities, the sooner the public will realize that he, like other members of the unit, is an educator in his field. When the lesson of the value of sanitation has been learned, it will not be so difficult to install approved sanitary equipment.

C. C.

BUREAU OF SANITATION

G. H. Hazlehurst, Director

GRAPHICAL PRESENTATIONS IN RELATION TO PUBLIC HEALTH WORK

In dealing with almost any public health problem, one of the first requisites for success is the cooperation of the people in the vicinity in which one is working. To obtain this cooperation, the general public has to be convinced of the need for the work and the benefits to be derived therefrom. Graphical presentations play an important part in accomplishing this.

A graphical presentation is a graph, chart or map showing statistical data in a pictorial manner.

Many people to whom statistics, presented in tabular form, mean little, immediately grasp the significance of these same statistics in graphical form. Bar charts, showing a decreasing death rate from typhoid fever, malaria or any other disease each year since the organization of county health units convey to the public a greater sense of accomplishment than a long enum-

eration of rates or percentages would. Small state maps with the counties shaded (cross-hatched), according to their death rate per hundred thousand population from a specific disease, furnish a convincing study to the interested public. These maps can also be compared from year to year to illustrate the result of work done in a specific locality. The geographical distribution of the various diseases may also be studied in this way.

Bar charts and maps, showing death rates from certain diseases, interest a great variety of persons. They are frequently in demand to illustrate talks to civic clubs, to exhibit at county fairs, for class room study in high schools and colleges, and for publication with articles. In other words, they play an important part in the general education of the public.

There are other types of graphical presentations which play a more specific part in public health work. One of the most important of these is the sanitary survey, which is a map of a town or locality (drawn to scale), showing the approximate location of each house and the type of sanitation existing there.

When such a map, giving a clear picture of the true situation, is presented to a town council, the members usually grasp at once the problem before them. Consequently, these maps are often instrumental in bringing about the passage of sanitary ordinances. In one instance in Alabama, a sanitary survey was drawn on a small rural community where there had been an outbreak of typhoid fever. The location of each case of typhoid was also shown. These cases clustered so persistently around the open-back privies that the people promptly instituted and completed a sanitation program.

Another important type of graphical presentation is the malaria survey. These surveys center around ponds, swamps, low-lying areas and other possible anopheles breeding places. Such surveys generally serve to locate the infected area and the origin of infection. On such a survey the country for several miles around the suspected malaria focus is mapped. Houses and recent cases of malaria are shown. The grouping of these cases generally indicate clearly the malaria focus.

People living close to anopheles breeding areas such as uncleared ponds and lakes, which are used for fishing and swimming purposes, sometimes conscientiously believe that their malaria is contracted elsewhere. When they are shown a picture of the facts, they almost invariably urge drainage, clearing or other control measures.

All drawings for public health work have certain things in common. They must be clear, vivid, as simple as the subject matter presented permits, well balanced and pleasingly titled. These characteristics serve to attract attention and to hold it. The facts presented, however, are of prime importance and the greater number of individuals they reach the smoother the path of public health work.

Graphical presentations, by reason of their popular appeal, afford an invaluable means of transmitting public health information to the people.

D. D.

CURRENT STATISTICS

State Department of Health

*PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA

	1932 Dec.	1932 Nov.	Total Cases to Date	
			1932	1931
Typhoid	15	29	772	992
Typhus	14	17	237	80
Malaria	66	133	2203	2481
Smallpox	6	2	464	295
Measles	7	14	291	9303
Scarlet fever	164	189	1459	1813
Whooping cough	142	75	1565	822
Diphtheria	160	237	1888	2198
Influenza	25656	2206	30584	5986
Mumps	143	58	1126	1167
Poliomyelitis	2	2	35	57
Encephalitis	4	3	26	46
Chickenpox	143	62	1104	1756
Tetanus	2	9	70	51
Tuberculosis	243	238	4366	5066
Pellagra	12	14	702	1120
Meningitis	6	4	65	226
Pneumonia	687	127	2855	3313
Syphilis (priv. cases)	90	107	1998	1568
Chancroid (priv. cases)	3	0	39	67
Gonorrhea (priv. cases)	81	89	1352	1655
Ophthalmia neonatorum	1	2	19	14
Trachoma	0	0	2	2
Tularemia	0	0	28	6
Undulant fever	0	1	17	20
Dengue	0	0	3	2
Rabies	0	1	1	2

*As reported by physicians and including deaths not reported as cases.

COMMENT

COMMUNICABLE DISEASES IN ALABAMA DURING 1932

The above tabulation sets forth the number of cases of communicable diseases reported in Alabama during 1932. Naturally there are fluctuations when compared to previous years but certain records are noteworthy.

(1) The number of cases of typhoid fever reported for the year reached an all-time low. Since the beginning of organized health work in the State typhoid fever has been one of the main points of attack and the results of 1932 are, to say the least, encouraging.

(2) Typhus fever for the first time reached serious proportions. A study to be conducted during 1933 should answer some of the perplexing problems in regard to the control of this disease.

(3) Malaria continued the favorable record of 1930 and 1931.

(4) Diphtheria showed a decrease from the preceding year but is still far too prevalent. A concentrated effort to reach all preschool children with toxoid would soon show results in these figures.

(5) Measles tends to occur in cycles and 1932 was one of the low years. 1933 can hardly hope to equal this past year's record and it is almost safe to prophesy a measles outbreak in the spring of this year.

(6) Influenza reached epidemic proportions late in the year. This epidemic became evident early in November and reached its peak early in December. Most reports indicate that the disease was mild and the fatality low as compared to previous epidemics.

(7) Almost five hundred cases of smallpox is not an enviable record, yet it is better than many preceding years.

(8) Pellagra cases showed no increase in spite of economic conditions. This disease is poorly reported, however, as a case may recur year after year so is only reported once. Mortality statistics will give a truer picture of actual conditions with this disease and probably also with tuberculosis.

As a whole the 1932 records are encouraging. Gratifying progress has been made and attention is again directed to those diseases requiring continuing or increased efforts.

PROVISIONAL MORTALITY STATISTICS
Alabama, November 1932

CAUSE	Number of Deaths Registered Nov. 1932			Annual Rate per 100,000 Population		
	White	Colored	Total	Nov. 1932	Nov. 1931	Nov. 1930
ALL CAUSES	1143	991	2134	960.1	1049.4	1099.7
Typhoid fever	5	4	9	4.0	10.4	5.5
Smallpox					0.9	
Measles						
Scarlet fever	4		4	1.8	1.4	5.5
Whooping cough	5	7	12	5.4	3.6	4.6
Diphtheria	27	2	29	13.0	20.9	19.3
Influenza	63	37	100	45.0	21.3	27.5
Pneumonia, all forms	78	67	145	65.2	91.1	96.3
Poliomyelitis					0.4	1.4
Tetanus		1	1	0.4	2.3	0.9
Tuberculosis, all forms	58	100	158	71.1	82.5	70.2
Tuberculosis, pulmonary	54	92	146	65.7	73.5	62.4
Malaria	8	5	13	5.8	10.9	18.3
Cancer, all forms	64	27	91	40.9	54.0	57.8
Diabetes mellitus	19	7	26	11.7	10.0	5.0
Pellagra	5	15	20	9.0	15.0	22.9
Cerebral hemorrhage, apoplexy	64	48	112	50.4	56.2	63.3
Diseases of heart	166	98	264	118.8	113.4	127.5
Diarrhea & enteritis						
Under 2 years	10	8	18	8.1	14.0	22.0
2 years and over	4	3	7	3.1	5.9	8.7
Nephritis	98	69	167	75.1	85.7	92.2
Puerperal state, total	21	10	31	13.9	16.3	20.2
Puerperal septicemia	6	4	10	4.5	5.4	7.3
Congenital malformation	17	7	24	10.8	9.1	3.7
Congenital debility and other diseases of early infancy	60	41	101	45.4	54.9	50.9
Senility	19	35	54	24.3	15.0	22.0
Suicides	18	2	20	9.0	6.8	5.0
Homicides	20	44	64	28.8	21.3	17.0
Accidental burns	12	9	21	9.4	5.9	8.7
Accidental drownings		6	6	2.7	2.7	5.5
Accidental traumatism by firearms	10	7	17	7.6	11.3	5.5
Mine accidents		2	2	0.9	0.4	1.8
Railroad accidents	6	1	7	3.1	1.4	2.8
Automobile accidents	38	11	49	22.0	19.0	17.9
Other external causes	23	15	38	17.1	23.1	19.3
Other specified causes	165	135	300	135.0	152.4	154.5
Ill-defined and unknown causes	56	168	224	100.8	109.7	116.5

Medical News

(Secretaries of county medical societies and other physicians will confer a favor by sending for this section of the Journal items of news relating to society activities.)

The American Board of Obstetrics and Gynecology proposes to hold the first of a series of annual dinners for Diplomates of the Board and their friends on the first day of the Scientific Session of the American Medical Association meeting in Milwaukee, at which time the successful candidates from the examinations of the day before will be introduced in person, one or more addresses will be made by officers of the Board and a Round Table Conference and general discussion of the activities of the Board will follow. Diplomates expecting to be in attendance at the Scientific Session of the American Medical Association are urged to make reservation for this subscription dinner as early as possible

through the office of the Secretary of this Board. Further announcements will be made through the Journal of the American Medical Association and the American Journal of Obstetrics and Gynecology.

The next written examination and review of case histories will be held in cities throughout this country and Canada, where there are Diplomates who may be empowered to conduct the examination, on April 1, 1933.

The next general, clinical examination is to be held in Milwaukee on Tuesday, June 13, 1933, immediately preceding the annual session of the American Medical Association. Reduced railroad rates will apply.

For further information and application blanks, address the Secretary, Dr. Paul Titus, 1015 Highland Building, Pittsburgh, Pennsylvania.

* * *

The Southeastern Surgical Congress announces its fourth annual assembly at the Biltmore Hotel, Atlanta, March 6, 7 and 8. Among the prominent surgeons and internists scheduled to appear are Walter E. Sistrunk, Dallas; Geo. W. Crile, Cleveland; W. D. Haggard, Nashville; Chevalier Jackson, Philadelphia; H. A. Royster, Raleigh; Dean Lewis, Baltimore; W. Wayne Babcock, Philadelphia; Curtice Rosser, Dallas; Irvin Abell, Louisville, and Robert Wilson, Charleston.

* * *

At a recent meeting of the Barbour County Medical Society, Dr. P. P. Salter, Eufaula, was elected President; Dr. James Reid, Clayton, Vice-President; and Dr. E. M. Moore, Clayton, Secretary-Treasurer.

Dr. Salter was re-elected to the Board of Censors, whose Chairman is Dr. J. S. Tillman of Clio.

Dr. T. D. McKnight, Clayton, formerly a member of the Pike County Medical Society, has been elected a member of the Barbour County Medical Society.

* * *

The Houston County Medical Society in regular session January 6 elected the following officers for 1933:

President—C. W. Hilliard, Dothan.

Vice-President—W. P. Roberts, Dothan.

Sec-Treas.—F. G. Granger, Dothan.

Dr. H. B. Burdeshaw, Dothan, was elected a member of the County Board of Censors.

Dr. W. A. Lewis, Enterprise, has been Secretary of the Coffee County Medical Society for twenty-one years, having been elected to office first on December 7, 1911 and each year thereafter.

* * *

Dr. R. M. Golson, Prattville, has been elected President; Dr. E. H. Downs, Billingsley, Vice-President; and Dr. J. E. Wilkinson, Secretary-Treasurer of the Autauga County Medical Society.

Dr. E. M. Thomas, Prattville, has been elected a member of the County Board of Censors.

* * *

The following have been chosen officers of the Cullman County Medical Society for 1933: Dr. C. E. Herrin, President; Dr. J. G. Daves, Vice-President; and Dr. M. S. Whiteside, Secretary-Treasurer.

Dr. T. H. Sudduth has been elected a member of the Board of Censors, his term to expire January 1, 1937.

* * *

Dr. John McLaughlin Forney, Assistant Clinical Professor of Obstetrics, School of Medicine, University of Alabama, was elected an honorary member of Alpha Epsilon Delta, honorary premedical fraternity, and gave an address at an open meeting on January 27th in the lecture room, Commerce Building. His subject was "The Future of a Medical Career".

* * *

The Bullock County Medical Society has elected as officers for 1933 Dr. J. W. Thomason, Midway, President; Dr. W. H. McCaslan, Union Springs, Vice-President; and Dr. J. K. Haygood, Secretary-Treasurer; Dr. E. M. Guthrie, Thompson, continues as a member of the Board of Censors.

* * *

Dr. Porter Stiles, Birmingham, has been elected a Fellow of the American Laryngological Association.

* * *

Dr. J. Harold Watkins, Montgomery, has been appointed an alternate delegate from the Medical Association of the State of Alabama to the American Medical Association, succeeding Dr. L. E. Broughton, deceased. The appointment was made by Dr. S. Kirkpatrick, President of the Association.

Truth About Medicines

NEW AND NONOFFICIAL REMEDIES

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Nonofficial Remedies:

Nostal.—Isopropyl bromallyl barbituric acid. It differs from barbital (diethyl barbituric acid) in that both of the ethyl groups of the former have been replaced, one by an isopropyl group and the other by a substituted brominated allyl group. The actions and uses of Nostal are essentially similar to those of barbital, but it is more active than barbital and is used in correspondingly smaller doses. It is marketed in the form of tablets 0.1 Gm. (1½ grains). Riedel-de Haen, Inc., New York.

Abbott's A-B-D Malt Extract with Cod Liver Oil and Viosterol 5 D.—Malt Extract, 57 per cent; cod liver oil with sufficient viosterol to adjust the antirachitic potency to 5 D, 30 per cent by volume; glycerin, 10 per cent; alcohol, 3 per cent. The finished mixture is assayed for vitamin B₁ (F) potency by a modification of the method of Sherman and Spohn and is required to contain not less than 60 units per fluidounce; it is assayed for vitamin B₂ (G) by the method of Sherman modified by the diet proposed by Munsell and is required to contain not less than 60 units per fluidounce. The cod liver oil is assayed by the method of the U. S. P. X for vitamin A and is required to contain not less than 500 units per gram; it is adjusted by addition of viosterol to contain not less than 66.65 vitamin D units (Steenbock) per gram when assayed by the method of the Wisconsin Alumni Research Foundation. The actions and uses are the same as those for cod liver oil. Abbott Laboratories, North Chicago, Ill. (Jour. A. M. A., December 3, 1932, p. 1945.)

PROPAGANDA FOR REFORM

Dangers of the Injection of Iodized Oils.—The Council on Pharmacy and Chemistry reports that it should be emphasized that the injection of iodized oils is essentially a surgical procedure, introducing a foreign

and possibly irritant body, and involving more or less risk, which should be weighed against the presumptive advantages, in comparison with the relative advantages and disadvantages of other measures. From the report of the Council it appears that the following cautions should be especially borne in mind: 1. Oils that have aged and darkened beyond their original color should never be used. 2. Subarachnoid injections should be avoided, at least until all other means of diagnosis have been exhausted. 3. Intratracheal and intrapleural injections should be avoided in tuberculosis of the respiratory organs and also when restriction of respiratory area would be contraindicated. 4. The injection pressure should be carefully controlled, so as not to lacerate the tissues. 5. Intra-uterine injections should be made only under fluoroscopic observation. 6. Iodized oil should not be used for renal pyelography, except in the form of emulsion; and the injection should be stopped if pain is felt. 7. Intravascular injections with iodized oil appear too dangerous; the use of emulsions for this purpose requires further study. (Jour. A. M. A., December 3, 1932, p. 1946.)

"New Toasted Cream of Barley" Not Acceptable.—The Committee on Foods reports that the American Barley Corporation of Minneapolis submitted a cereal called "New Toasted Cream of Barley," a lightly toasted, granular cereal consisting essentially of the endosperm and a portion of the bran of barley. The statements are in part grossly exaggerated, of a medicinal character, inappropriate for food advertising, and misleading. Cream of Barley is fattening just as are any carbohydrate foods if ingested in quantities exceeding the body's demands. This cereal is not a "tonic for nerves and appetite." Such a statement is an attempt to attribute medicinal properties to the food. Claims that it contains "just the right proportions of carbohydrates, protein, mineral salts" are unsupportable. The copy for the label gives the impression of an effort to depict the product as containing "magic" medicinal virtues and thus to mislead and deceive. The manufacturer was advised of the opinion and recommendations of the Committee, but these were ignored. Therefore this cereal cannot be list-

ed among the Committee's "accepted" foods. (Jour. A. M. A., December 3, 1932, p. 1949.)

The Action of Copper in Iron Metabolism.—The importance of copper as a supplement to iron for the regeneration of hemoglobin in anemic rats was demonstrated four years ago by Hart, Steenbock, Waddell and Elvehjem. These investigators showed definitely, as Elvehjem and Sherman have recently pointed out, that, in the presence of copper, soluble inorganic iron salts can be used directly for the formation of hemoglobin. Since that time a number of workers have studied factors affecting the production of hemoglobin in rats rendered anemic by whole milk diets. Most of this work has verified the original conclusions concerning the importance of copper; and today nearly all workers agree that copper is an active agent in hemoglobin synthesis. As Elvehjem and Sherman conclude, copper does not affect the assimilation of iron but does function in the conversion of inorganic iron into hemoglobin. In recording these studies it seems desirable to remember that the extent to which the experimental studies are applicable to the human being remains for the most part to be established. Copper is far more widespread in foods than may be commonly supposed. The need for copper is quantitatively far smaller than the requirement of iron. The newer knowledge should not be accepted as a warrant for uncontrolled administration of copper compounds to man. The facts regarding the possible actual needs and function of this element in human physiology remain to be more definitely ascertained. (Jour. A. M. A., December 17, 1932, p. 2114.)

Gomco Syringe Steril-Case Not Acceptable.—The Council on Physical Therapy reports that the Gomco Syringe Steril-Case, manufactured and submitted by the Gomco Surgical Manufacturing Company, Buffalo, N. Y., may be described as a hypodermic needle enclosed in a compact vest pocket carrying case resembling a fountain pen. By means of an alcoholic preparation the needle is said to be sterilized and ready to carry. In the advertising matter accompanying the hypodermic needle it is claimed

that the needle itself is "rustless" and the syringe case offers a means of complete syringe sterilization. While the needle may be made of the so-called rustless steel, it nevertheless rusts and becomes unfit for use after being carried in the pocket case syringe for about a week. Renewals of the needles at such short intervals would be objectionable. Because the needle rusts very readily and therefore becomes unfit for use, the Council on Physical Therapy declined to include the Gomco Syringe Sterl-Case in its list of accepted devices. (Jour. A. M. A., December 24, 1932, p. 2183.)

Statements on Constipation in Lay Advertising for Roughage Foods and Bran.—The Committee on Foods reports that constipation may be due to causes other than those of dietary or "roughage" origin. Advertising to the laity shall refer to constipation due to insufficient roughage or food essentials only. Cases of constipation not yielding to the regular ingestion of foods providing considerable roughage should be under the care of a competent physician. A permissible claim for a roughage food follows: "Constipation due to insufficient roughage in the diet should yield to . . . eaten regularly. A competent physician should be consulted for cases not corrected in this simple manner." Wheat bran has laxative value. Whole grain cereals, and vegetables and fruits in general, are excellent sources of roughage. Bran itself may be irritating to sensitive bowels; the indigestible cellulose of vegetables and fruits is much less irritating. (Jour. A. M. A., November 5, 1932, p. 1605.)

Quackery and Physical Therapy.—A quack is generally defined as a person who makes claims for skill that he does not possess, especially medical skill. The quack in the field of physical therapy, as is pointed out by Dr. C. B. Heald, is more likely to make the claims for the machines than for his particular ability in operating the machines. In his consideration of this subject, Dr. Heald has set down certain limitations to determine who are qualified to practice physical therapy either as physicians or as lay technicians. He recognizes that no lay technician should use such devices on the sick without medical prescription and without repeated supervision of

the patient by the physician. The responsibility for the care of the patient is not that of the technician but that of the doctor whom the patient consults. Heald feels that all physical therapeutic measures in the hospital should be under the control of one department, not with light treatment in the department of dermatology, massage in the department of orthopedic surgery, and the electrical devices for stimulating nerves and muscles in the department of nervous and mental diseases or in the radiologic department. The American medical profession has its own Council on Physical Therapy, which already has contributed largely to the control of charlatanism in this field and which, as it gains momentum, will probably do even more effective work in this direction. (Jour. A. M. A., November 5, 1932, p. 1606.)

ACCEPTED DEVICES FOR PHYSICAL THERAPY

The following have been accepted by the Council on Physical Therapy of the American Medical Association for inclusion in its list of accepted devices for physical therapy:

Eveready Table Model Carbon Arc Lamp, Type M-1.—The Eveready Table Model Carbon Arc Lamp is designed to produce a light approximating natural sunshine for use in the home or for individual therapeutic light treatment under the direction of a physician. The lamp is a portable model. Model M-1 is designed for operation on direct current or 60 cycle alternating current at standard household voltage. Model M-2 is the same as Model M-1 except that it is adapted to operation on 25 cycle alternating current and should not be used on direct current or 60 cycle alternating current. The Eveready Table Model Carbon Arc Lamp with Eveready Sunshine Carbons is claimed to provide ample ultra-violet radiation at a distance of 3½ feet with Correx filter in place to prevent rickets and aid in the promotion and development of sound bones and teeth when calcium metabolism is at fault, and that with the use of various impregnated carbons, it will deliver sufficient ultra-violet, visible and infra-red radiations for individual treatment at home under the direction of a physician practicing artificial light therapy. National Carbon Company, Inc., Cleveland.

THE JOURNAL

OF

The Medical Association of The State of Alabama

Published Under the Auspices of the Board of Censors

Vol. 2, No. 9

Montgomery, Alabama

March 1933

A UROLOGIC CONSIDERATION OF FOCAL INFECTIONS*

J. U. REAVES, M. D.
Mobile

It has long been known that bacteria during any infection, should they reach the blood stream, will be excreted in the urine. This is true of both acute and chronic diseases. On the other hand a great many observers have shown that anything that obstructs the flow of urine makes possible an infection of the kidney. The infecting organism may reach the kidney pelvis by any one of the three routes which are conceded to be used by such infecting organisms: namely, (a) hematogenous, (b) lymphogenous or (c) urogenous.

In the hematogenous route the organisms are transported to the kidney from a primary focus elsewhere in the body (teeth, tonsils, otitis media, appendix, gall bladder, infected or thrombotic hemorrhoids, rectal ulcer, colon infections, etc).

Ascending renal infection, that is, from the bladder directly through the lumen of the ureter, was believed to be the cause until the work on renal tuberculosis and the work of Brewer on acute hematogenous renal infections pointed out the fallacy of the assumption. Draper and Braasch proved conclusively that ascending renal infection could not occur unless there was definite damage to the uretero-vesical outlet. When this orifice has been injured and urinary stasis exists as the result of obstruction, reverse urinary (ureteral) peristalsis may occur, thereby sending infectious material from the bladder to set up a primary infection in the kidney pelvis, or add to that already deposited from the blood stream. Calculi, kidney ptosis, pressure on the ureter or ureters by the pregnant uterus, prostatic hypertrophy, and stricture at or below

the vesical neck are the most common causes of urinary stasis we meet with. This stasis causes a lowering of the resistance of the kidney against infection of the bacteria and toxins being eliminated or excreted by the kidney from the blood stream. It will be readily observed that the bladder can be the contributor to the urinary discomfort by reflux of its infected contents to the upper urinary tract, and even in other cases it must be remembered that the bladder is often the signal station for trouble which is primarily in the upper urinary tract. However in either case the bladder must be given the desired attention for the patient's comfort while we find out just where the focus of infection exists.

The hematogenous infection has the glomeruli for its original site of lodgement. The infection thence extends along the tubules to the apices of the pyramids with secondary invasion of the pelvis. Hunner has directed attention to the fact that the hematogenous route explains many of the cases of ureteritis in the female, especially those in which ureteral stricture exists. One can readily understand how a focus of infection in any portion of the body may be followed by metastatic infection in one or both kidneys. Involvement of the perinephritic tissues may occur either primarily, that is, the organism may be carried directly to the perinephrium through the blood stream, or the fatty capsule may be involved, secondarily, by extension from a cortical focus.

In the early stages of hematogenous infection the surface of the kidney presents numerous minute foci of suppuration, each surrounded by a zone of intense hyperemia. The cortex may at first be the chief site of pathologic changes, but as the infection progresses involvement of the entire parenchyma so completely changes the pathological picture that it is impossible, in the majority of cases in the later stage, to distin-

*Read before the Baldwin County Medical Society, Bay Minette, May 5, 1932.

guish whether the primary mode of invasion was hematogenous or urogenous. The streak-like areas radiating from the apices of the pyramids toward the cortex are supposed to be quite characteristic of an ascending infection, but, as already stated, where infection is far advanced, it is impossible to determine whether the primary mode of invasion was ascending or descending, that is, hematogenous or urogenous. As the infection progresses in the parenchyma, necrosis of the tissue occurs with the formation of cavities at the expense of the parenchyma until the entire kidney is converted into a series of cysts filled with pus and separated by septa. This stage is familiar to all of us as pyonephrosis.

The lymphogenous route, although not fully accepted by some observers, will, I believe, explain many of the cases of renal infection which do not present the characteristics of hematogenous invasion. This route is divided into two sub-groups: (a) those cases in which the infection is carried upward by the lymphatics of the ureter from the bladder, prostate, seminal vesicles, and internal genitalia, not overlooking the urethra in the female; and (b) those in which, through communication of the lymphatics of the colon and the kidneys, the organisms are carried from the alimentary to the urinary tract without first passing through the blood stream.

The urogenous route assumes that the organisms travel along the ureteral mucosa, or multiply in the stagnant urine in the bladder and reach the kidney by reflux. It is difficult to understand how organisms can migrate upward, in a direction opposite to the excretory current, unless a more or less strictured condition of the ureter exists. It is quite generally accepted that obstruction, whether it be intrinsic or extrinsic, of the urethra, bladder, ureter, or renal pelvis, favors the spread of infection in the upper urinary tract. It must be remembered that the principal causes of obstruction in the lower urinary tract are: urethral stricture, prostatic hypertrophy, vesical calculi, etc. Also remember that the causes of obstruction in the upper urinary tract are: (a) extrinsic—spiral twists, kinks, and inflammatory compression of the ureter; and (b) intrinsic—congenital and acquired ureteral strictures, calculi, be-

nign and malignant neoplasms of ureter or renal pelvis or kidney proper, especially the lower pole.

The bacteria most frequently responsible for renal infection are the colon bacillus and the group most generally spoken of as pyogenic organisms. The colon bacillus, according to different observers, is found in from sixty to ninety per cent of cases of uretero-pyelonephritis, either alone or associated with one or more of the pyogenic germs. Of the latter, the *Staphylococcus aureus* and *albus* account for practically all of the remaining number of cases, be it ten or forty per cent. In the cases of renal tuberculosis the tubercle bacillus is found and it is associated with either the colon bacillus or one of the pyogenic organisms.

The two possibilities for infection are: (a) a loss of resistance of the kidney or an increase in the virulence of the organism; and (b) a constriction or stopping up of the natural washing-out of the urinary passages. The latter of these factors has been studied by a great many observers, all of whom have shown that anything which obstructs the natural flow of urine makes possible an infection of the kidney, whether the infecting organism be introduced by anyone of the three routes named above. If the obstruction be at the ureteropelvic junction or in the ureter and at the same time occur relatively early, the parenchyma, instead of becoming necrotic, is compressed as the result of the dilatation of the renal pelvis and its calyces. This sequel of infection is known as infected hydronephrosis.

Diagnosis: It is of paramount importance that a complete and careful examination be made in every case presenting. The information thus obtained will indicate the proper therapeutic measures. Numerous cases can be cleared up, if not of too long standing, without cystoscopic examination; that is, if we are careful in locating the foci of infection and removing same and being sure that there is no obstruction producing stasis at any point in the urinary tract. In these cases water and urinary antiseptics are all that need be directed to the urinary tract. If the onset is very severe, accompanied by chills and fever, and general malaise, or the patient gives a history of previous attacks, cystoscopy is necessary with

a detailed examination of the bladder and posterior urethra, catheterization of both ureters with examination of urine collected from the bladder, and right and left kidney. Opaque catheters should be used of sufficient size to detect any obstruction within the ureters and an x-ray plate made while catheters are in place. Urography is an excellent way of distinguishing between hydronephrosis and pyonephrosis. Retrograde or intravenous administration of the pyelographic media may be elected as the case demands. Teeth must be examined and patient sent to an exodontist for x-ray and extraction of teeth if necessary to remove infective foci. A competent head surgeon should examine the tonsils, ears and nasal passages for any evidence of infective foci and if found these should be corrected. Colon bacilli do not usually go through a normal mucous membrane so we must examine the anus and rectum and if infected or if thrombotic hemorrhoids are found these must be corrected as well as any other rectal pathology such as ulcerations, infected crypts, etc. The feces should be examined for intestinal parasites as these may cause foci along the colon mucous membrane affording easy access to the blood stream for the colon bacillus. Crabtree and Cabot have proved that renal infections are for the most part hematogenous, that colon bacilli circulate in the blood during the early hours of symptoms due to colon pyelonephritis, and can be demonstrated by blood culture. In a limited number of these cases blood infection was demonstrated to be primary, followed in order by albuminuria, bacilluria and pyuria. If the patient be a woman any infection due to laceration, urethritis, endocervicitis or endometritis must be corrected.

It is a noteworthy fact that almost all of these patients who are adults seek relief primarily from bladder symptoms, and if we are not careful we will find that we are trying to relieve this urinary symptom forgetting that the permanency of relief depends upon the adequate correction of the underlying factors. In cases in which pathologic changes predominate in the renal pelvis, the infiltration of its walls and contents not only favors infection but prolongs it. The constant irritation of excreted bacteria lowers the resistance of the kidney to

the onslaught of this organism and its toxins. This to my mind explains the recurrences we see in cases of pyelitis, especially where there is obstruction in either the lower or upper urinary tract. There is one impressive feature about the pathologic changes in infection of the upper urinary tract, which is also true of infections in other parts of the body: namely, that much depends upon the virulence of the particular strain of organism and the resistance of the host.

We cannot clear up the branch with the hogs wallowing in the spring; therefore any foci of infection must be corrected. Urinary stasis is either the primary cause or a contributory cause of the infection in the upper urinary tract. Therefore all and any obstruction to the easy outflow of urine from the calyces to the external urethral meatus must be removed according to the demands in the given case. Large quantities of water must be given in order to speed up this outward flow as well as dilute the toxins and bacteria in the urine. Urinary antiseptics internally do much good. If the case is over six weeks standing and the urine is not free from infection, lavage of the kidney pelvis once each week with Argo-Iodin solution is very beneficial, and is non-irritating to the highly neurotic patient with an irritable infected kidney pelvis or ureter.

CONCLUSIONS

The colon bacillus is the most frequent cause of kidney infections, and is often overlooked entirely as to its foci.

Vesical symptoms are usually first symptoms complained of when the patient consults us for relief.

The infection is hematogenous in the majority of cases except where there is urinary stasis at some point in the urinary tract.

Cystoscopic examination should be made of the urinary tract, with x-ray and laboratory methods unless the symptoms clear up promptly, or if the symptoms are ushered in with chills and fever.

Frequent urinary examinations should be made after the case is dismissed to insure permanent cure.

Contributory foci must be located and removed.

THE CHILD-BEARING WOMAN*

M. S. DAVIE, M. D.
Dothan

The child-bearing woman is the mother of the race, the primary factor in any scheme of civilization, and the chief asset of any nation. The thrift and welfare of her physical and mental organisms should be conserved in every way, and her procreative destiny anticipated from her prenatal period to and after her menopause. Napoleon's crisp retort to Madame de Stael has oft been quoted. She asked rather flipantly what France most needed to make her great and he replied "Mothers". The ultimate motherhood of the girl baby should be anticipated from the time of her birth, and the family physician is the properly constituted guardian of her destiny. Tact and diplomacy will not provoke the thought of meddlesomeness, and the thoughtful physician who realizes his responsibility will find frequent opportunity for observations to this girl's mother and later to the girl herself which will prove of incalculable value in the chief purpose and function of her creation, which is giving strong, healthy, normal citizens to the nation.

These suggestions are simply prefatory, and this is not the place to develop them.

Unhappily, the physician is usually confronted in his office by the primipara who comes in with the announcement that she is afraid she is pregnant and he discovers she has no background at all. She has embarked upon this momentous voyage without any chart or compass and it becomes his task to bring her safely into port.

Under the present regime it then becomes necessary for the conscientious physician to disregard all thought of compensation and enter upon a campaign of education and supervision which the laity takes as a matter of course and to which it attaches no monetary value.

It may be well to observe, in passing, that the laity should long ago have been soundly taught that pregnancy is a "disease" of nine months duration, should not be undertaken without competent counsel, which is entitled to compensation that at least gives dignity to services rendered.

Apropos of this, I understand that some pediatricians are following the custom of having the baby brought down to the office at stated intervals for observation and counsel for six months service for a stipulated price. And, why not? The man who neglects to follow this practice with his automobile will have expenses and wrecks which are avoidable.

A careful case history should be taken, and a thorough physical examination made. This is the time to find out what kind of material there is to work with, mental, moral and physical, for the campaign ahead. Any errors in habit or mode of life should be explained, and any physical handicaps discovered and evaluated. Pertinent things should be frankly discussed and a folder containing general instructions and common information given each patient.

All clothing should swing from the shoulder and closed drawers worn to avoid dust and infection. Some women wish to conceal their condition with tight corsets, restraining the expansion of the uterus, increasing the percentage of such deformities as clubfoot, wry neck, forcing the uterus and fetus down into the pelvis, causing congestion of pelvic veins and lessened expulsive power of abdominal muscles. Tight lacing may be fatal to mother and fetus. This should be patiently explained. The pregnant woman must throw her head and shoulders back to maintain her balance and should wear shoes with low heels and broad soles.

The diet should be generous and wholesome, abundant in vitamins, always containing sweet milk or buttermilk, with a restricted protein intake, and an almost total avoidance of fats and sweets. Water should be taken freely and regularly. The advice from some quarters to use a special diet to restrict bone salts and secure an easier delivery is absurd. The diet should anticipate the metabolic needs of mother and fetus.

Most pregnant women are constipated and insufficient intestinal elimination may prove disastrous. The condition should be met in some systematic, routine manner. A ground fruit mixture, containing prunes, dates, seeded raisins, with the addition of a small amount of senna leaves, given with each meal, is usually satisfactory. Or a

*Read at a meeting of the Southeastern Division of the Association, Union Springs, July 27, 1932.

small amount of mineral oil may be used night and morning, reinforced by the addition of agar, phenolphthalein, cascara or magnesia, if necessary. Active purgatives should be avoided.

The most vulnerable point in the battle front is the kidneys, which should be checked every three weeks to the seventh month, and every two weeks thereafter; and every day if there is any hint of toxemia or nephritis. A 24-hour measurement should precede each urinalysis, and the output should not fall below 50 ounces. The urine should be checked for albumin, sugar, bile, casts and specific gravity.

No violent exercises of any kind should be allowed. Some gravidae may do extravagant physical stunts without penalty, while others abort on the slightest provocation. Seabathing may produce an abortion, while "jolts, running, sudden motions, lifting great weights, going up and down stairs quickly, horse-back riding, cycling, riding over rough roads, golf, tennis and dancing" are prohibitive.

Coitus during pregnancy is a pernicious practice, the dangers of which should be explained. There is a very definite risk of abortion from the impact of the penis against the cervix, the nervous shock is badly borne by some women, the leucorrhoea is increased, nausea and vomiting may be intensified and there is real danger of infection, as fatal sepsis and severe puerperal fever have been clearly traceable to this practice shortly before labor, especially in multiparae, where the cervix is more patulous.

The breast should be properly managed from earliest infancy. A small percentage of functionless mammary glands are due to mastitis neonatorum. The mammae need care in the growing girl, and their development at puberty provided for by changes in dress, to avoid pressure or injury. Pregnant women having heavy, pendulous breasts should wear some form of breast support, and care should be taken not to injure the breasts during the bath. The nipples should be frequently washed with good soap, dried and anointed with some sterile fat. Otherwise branny scales will accumulate and form moist crusts, which may be followed by cracks, fissures, blisters, and infection.

So much for hygiene relative to pregnant women.

There is no field of preventive medicine more promising than that of prenatal care. It is said that each year 25,000 women die in the United States from the immediate and remote effects of childbirth, that 100,000 babies are born dead, and another 100,000 die within the first few weeks after birth.

There is no way to calculate the invalidism and wretchedness of the others who are injured during labor, nor the number of babies who suffer cerebral or other damage. But everyone knows they are tremendous.

It is safe to say that proper prenatal care would obviate the most of this. Such supervision should be given the pregnant woman as will best guarantee a safe delivery, a living child, a quick come-back and a healthy baby.

The fitness for pregnancy and labor should be determined at first contact, checking heart, lungs, kidneys and investigating the mechanics of the situation, e. g., contracted pelvis, neoplasms, etc. Syphilis should always be considered, a watch should be kept for early discovery of such complications as eclampsia, placenta previa, nephritis, etc. No athlete should be more carefully groomed and trained for a test of strength than the pregnant woman for her ultimate delivery.

It is unwise to allow the gravida to begin labor with an abnormal presentation and shortly before the date set for the confinement the accoucheur should see the woman, check up her general condition, determine the position and presentation by abdominal and rectal examination, probably repeat pelvic measurements and auscultate the fetal heart. A cesarean section should never be a surprise, but always predetermined.

The technique of pelvimetric measurements is elaborately given in all the texts and will not be detailed here. Neither will we enter the controversial field of the early diagnosis of pregnancy. During the first trimester it is frequently impossible. Indeed, after teaching my nurses the various routine signs, I tell them only one is completely reliable, the same being the birth of the baby.

Nor will we go into the management of the labor itself, except to say that every case should be considered a major surgical proposition, and that the accoucheur should attend every case abundantly equipped for handling a normal or abnormal labor. Wherever possible obstetrical work should be done in a well equipped hospital, but, as this is frequently impossible, the accoucheur should carry to the private home an experienced graduate nurse. This will not only relieve him of much of the drudgery of the case, but will enable him to have various things competently done to which he cannot possibly give personal attention in the event of certain complications or emergencies.

Obstetric meddlesomeness is unallowable, instruments are often injudiciously used, the use of pituitrin is abused, and many things impatiently done which should not be done to shorten the duration of a slow but otherwise normal labor. The physician who is willing to do obstetrical work should be willing to take his punishment.

Every accoucheur should work out his own general program, and then individualize, as to how far he is willing to go and what he is willing to do in mitigating the suffering of the parturient woman. This is an interesting field and some conservative men have worked out some things which are safe and sound. Every woman is entitled to all the help which intelligence and skill can render her, but, in fairness to all concerned, it is suggested that only the measures be indulged in which have been standardized for a time in the larger cities by men who are known to be free from brain storms.

It is not true that parturient women have immunity against the ill effects of general anesthetics, especially chloroform and ether. All anesthetics weaken the uterine contractions. Ether or chloroform may cause acidosis. Ether may cause bronchitis or pneumonia, chloroform affects the liver and kidneys, may cause acute yellow atrophy of the liver and hemolyzes the red blood corpuscles. Neither should be given around an open flame, ether being inflammable and chloroform being decomposed into dangerous gases. Nitrous oxide and oxygen, and ethylene anesthesia require a skilled anesthetist and are impracticable

out of the hospital. This is especially true of ethylene.

The fetal heart should be frequently auscultated and detection of any distress may cause an immediate change in tactics. The rate should be 120 to 160, of fair quality, slowing up a little during contractions, and rates below or above these figures, or any marked weakening or irregularity, should excite immediate attention and an effort be made to discover the cause.

The perineum should be judiciously protected, but not at the risk of damage to the baby. There is always some injury to all of the structures of the pelvic floor in delivery, but otherwise serious injury can frequently be prevented by correct manipulation. The pelvic outlet may be diseased, inelastic from cicatricial tissue, and in some may naturally tear like wet blotting paper. We may deliberately disregard the perineum when the baby is imperiled, as in breech presentation or imminent asphyxia.

An effort should be made to avoid delivery of the head in unfavorable positions, as face, brow or forehead. A slow delivery secures maximum elasticity of the pelvic floor, and delivery of the head in enforced flexion presents the smallest circumferences to the parturient passage. Episiotomy will not be considered.

Too little consideration is given to the third stage. A trained hand should be kept on the fundus and a competent eye constantly on the vulva until the placenta is delivered. If there is no ballooning of the uterus or external bleeding there is nothing to do but wait 15 or even 30 minutes. Uterine massage or Crede's expulsion should not be instituted unnecessarily. If there is no bleeding and the uterus is well contracted one may safely leave and come back eight or ten hours later, which is better than subjecting the woman to too much manipulation.

The accoucheur should always inspect the placenta himself, using a good light, turning it inside out and checking it in detail. Some massage and Crede's expulsion are allowable, but stay out of the uterus, if possible. Slight retention of placenta or membranes is safer than invasion of the uterus at this time.

The vulva, perineum and cervix should be inspected for damage, but it is a matter of judgment and conditions as to when repair should be made. Instruments should be available for immediate repair, which should either be done then or after the puerperium. Never should this opportunity be taken to repair old lacerations.

It is usually better to tell the patients to stay in bed ten days, no matter how well they do, though the position should be constantly changed. They are entitled to more liberty, but will abuse other instructions in many cases.

Finally, the patient should come to the accoucheur's office with her baby eight weeks after delivery for thorough examination of both. I will not consume further time with details, but the examination of both should be painstaking and inclusive, and whatever abnormalities are found should be handled upon their merits.

As a last word, this woman should be told to come back for examination whenever there is anything wrong with her which is in any way connected with her reproductive system.

DIABETIC COMA

W. S. HANNAH, M. D.
Montgomery

Coma was first described in 1854 by a German, Von Dusch, and a Scotchman named Marsh. Twenty years later, Kussmaul, a German physician, wrote his classical description of coma.

Diabetic coma, although usually of gradual onset, is an acute emergency when it presents itself. It is just as great an emergency as acute appendicitis or intestinal obstruction. I do not know of any condition that is more important for the family physician to treat immediately, than a case of diabetic coma. There is no disease which yields more satisfactory and spectacular results when early and energetic treatment is instituted.

Ignorance and carelessness on the part of the patient or physician is usually the direct etiologic factor of most cases of diabetic coma. Patients neglect to follow their diets or carelessly omit their insulin. Often the physician is busy and improperly advises his patients about insulin and dietary

regulations. Intercurrent infection and starvation are additional factors which may precipitate coma. In the future we must pay more attention to the education of our diabetic patients, so that they can cooperate with us in a more intelligent manner.

Of course there will always be some deaths from diabetic coma, due to the complications that arise, but the majority of cases of uncomplicated diabetic coma are preventable. Prior to the insulin era the mortality from diabetic coma was almost 100%. During the past few years the incidence of and death from diabetic coma have dropped from 60% to 11% (Joslin). Coma can be prevented in most cases by more careful attention to the details of treatment, the early recognition of onset, and the institution of more energetic treatment.

A patient should be instructed by his physician never to omit insulin unless he is told to do so. He should also be told that if he develops an infection of any sort to call his physician immediately, as his insulin dosage may have to be increased in the presence of an infection. If he has nausea, vomiting, abdominal pain or fever he should go to bed, call a doctor, procure the services of a nurse or friend to stay with him, and move the bowels with an enema. He should omit at least one-half of his diet and take orange juice instead, and take a cup of tea or a little coffee every hour. The attending physician will direct the insulin therapy.

It is of paramount importance for the physician and patient to be able to discriminate between diabetic coma and insulin shock. Coma is insidious in its onset and usually comes on gradually. It is caused by too much food, too little insulin, an intercurrent infection or starvation. The skin is dry and flushed, the pulse weak and rapid, the respirations are heavy and deep. The patient usually vomits. The urine contains sugar and acetone bodies.

Insulin shock comes on suddenly and results from too little food, too much insulin or increased exercise, particularly in children. The skin is pale and moist, the pulse full and bounding, the respiration feeble. Vomiting is unusual in insulin shock. The urine is sugar free and acetone free.

When examining the urine of a diabetic patient and there is a doubt as to whether the patient is suffering from symptoms of coma or insulin shock, two specimens should always be obtained. The first specimen should be discarded, as this may represent residual urine in the bladder. The second specimen will be sugar free if the patient is suffering from insulin shock and will contain sugar if the patient is on the verge of coma. Laboratory data are helpful if laboratory facilities are available. The blood sugar is elevated in coma and reduced in insulin shock. The CO_2 combining power is normal or elevated in insulin shock, while in coma it is markedly decreased.

The signs and symptoms of impending coma are nervousness, restlessness, drowsiness, nausea, vomiting, abdominal pain and labored breathing.

The patient usually presents the typical "Kussmaul breathing". This is characterized by deep, slow and prolonged inspirations, with a short pause, followed by a short expiration. The urine contains sugar and acetone bodies, and the blood sugar is elevated. Lowy's sign is positive; that is, the pupils dilate when adrenalin is injected into the conjunctival sac. This phenomenon is supposed to be characteristic of pancreatic insufficiency. The eyeballs become soft. The patellar reflexes are lost.

Circulatory collapse with an extreme degree of myocardial failure is not an unusual occurrence. The pulse is accelerated and feeble, but usually regular. However, extrasystoles, auricular fibrillation, tachycardia, or myocardial failure may occur. The blood pressure is usually lowered, due to myocardial weakness and dehydration.

Nephritis, with nitrogen retention, is also a rather frequent finding. Dr. Joslin states, "that if the blood nitrogen exceeds 80 mg. the prognosis becomes grave". There is usually a leucocytosis ranging from 12,000 to 75,000.

The nausea, vomiting, abdominal pain, and distention may simulate the acute surgical abdomen, particularly appendicitis and peritonitis. These symptoms will often test the ingenuity of any competent physician, and it is sometimes impossible to make a diagnosis, unless an abdominal mass can be felt in the appendix region.

A word should be said about insulin shock. An insulin reaction may occur from one to eight hours after the administration of insulin. It results from too little food, too much insulin, or too long an interval elapsing between the administration of insulin and the intake of food. If the patient is vomiting or has a diarrhea, the food may not be absorbed and a reaction may result. Occasionally an unusual amount of exercise, particularly in children, will bring about a hypoglycemic reaction.

The cardinal symptoms of insulin shock are weakness, trembling, pallor, sweating, headache and nervousness. The juice of an orange by mouth or a lump of sugar will usually suffice to take care of a hypoglycemic reaction. If the patient is unconscious a 10% to 20% solution of intravenous glucose should be administered. The hypodermic administration of 0.5 cc. of a 1:1000 solution of adrenalin chloride is helpful in raising the blood sugar level.

If we are going to prevent deaths from diabetic coma the diagnosis must be prompt and treatment begun immediately. For this reason the family physician is in a position to render the patient in coma a great and efficient service, as he is usually the first one to see the patient. Treatment should never be deferred until the patient is sent to a specialist, and should be instituted before the patient goes to the hospital. Every hour that passes without treatment decreases the patient's chances of recovery.

An examination should be done to see if any complications exist. If complications are present they should be treated. The patient should be kept warm with hot water bottles and blankets.

Insulin must be given immediately. There is no standardized initial dose of insulin for a coma patient, nor is there any exact insulin dosage for a patient to receive in the first twenty-four hours. Just as digitalis must be given for myocardial insufficiency until therapeutic results are obtained, so must sufficient insulin be given in the first twenty-four hours to control the comatose patient. The amount of insulin necessary in the first twenty-four hours may range from 100 units to 1,000 units or more. This depends on the degree of coma. From 50 units to 100 units should be given

in the first half hour. Subsequent insulin treatment will depend on clinical and laboratory data. A second dose of insulin is usually necessary before the end of the first hour. From 20 to 40 units of insulin are employed every half-hour until the blood sugar drops to between 200 mg. or 250 mg. per 100 cc. of blood, when insulin is given less frequently every hour or two and in smaller doses. We should depend for guidance on the blood sugar level. I might emphasize the fact that the initial dose of insulin should be given before a blood sugar estimation is made. The insulin is usually given subcutaneously but in extreme cases intravenous injections are used.

Joslin has recently reported 74 cases of coma treated between 1929 and 1931. In adults the average amount of insulin given in the first twenty-four hours was 250 units. Nine of these patients received between 560 units and 1020 units.

Coma is more common in children due to the difficulty in controlling the diet and minor infections which occur. To a child who has never taken insulin 5 to 10 units every half hour may be sufficient. For a diabetic child who has had the disease longer the insulin dosage will be greater. In Joslin's series, the average amount of insulin given to children in the first twenty-four hours was 145 units. The minimum amount was 32 units and the maximum amount 840 units.

As the stomach is often dilated and life is endangered, gastric lavage should be done, but with great caution. The passage of a nasal tube is often the best procedure for a gastric lavage. A cleansing enema should be given immediately. These two procedures are important in order to prevent vomiting and dilatation of the stomach.

For dehydration it is advisable to give 500 cc. of normal saline intravenously and from 500 cc. to 1000 cc. subcutaneously. Vasomotor collapse is treated with fluids, infusions and occasionally a blood transfusion is advisable if signs of extreme shock are present.

Unless there are signs of disordered rhythm, as auricular fibrillation or signs of congestive heart failure, digitalis is not indicated.

Until recently most workers in the diabetic field have been using caffeine sodium benzoate freely as a stimulant in coma. In the light of the recent work of Long and his coworkers, namely, that caffeine in large doses brings about the production of lactic acid from glycogen causing cardiac irregularities and fatigue of the heart muscle, we should use caffeine more cautiously.

Opinion is still divided as regards the use of alkalies in diabetic coma. Personally, I can see no benefit to be derived from the use of alkalies in combating diabetic acidosis. Cases of tetany and convulsions have been reported following the use of alkalies and some workers feel that alkalies exert a harmful and inhibitory influence on fat metabolism, making the disease worse.

There is still a variance of opinion as to whether intravenous glucose should be given in diabetic coma. I feel that the administration of 250 cc. of a 10% glucose solution is of definite value. From 15 to 50 units of insulin should be added to the glucose solution. The amount of insulin to be added depends on the amount of insulin which has been given subcutaneously. The glucose solution helps to overcome dehydration, increases kidney action, and by doing so washes out some of the acetone bodies. Oxidation in the blood and tissues is increased and this helps to burn up acetone bodies. The glycogen-poor liver and heart muscle are replenished with glycogen, which is important in lessening acidosis.

In conclusion, I would like to emphasize the importance of early diagnosis, and prompt and energetic treatment of diabetic coma, particularly during the first twenty-four hours.

Blood in the Urine—Blood in the urine, either gross or microscopic, should be considered a fire alarm and as such may point to a large or small fire, depending on whether the underlying pathology is serious or not. We all hear the patient say, "Give me something to stop it," or "It does not hurt and is getting less," or "It stopped before and will again," etc. However, we must make the patient realize that hematuria is often intermittent and without pain, though the cause may be serious, even fatal in time. Accordingly an early diagnosis is of the utmost importance.—*Morton—J. Indiana M. A. March '33.*

UNDULANT FEVER*

REPORT OF CASE

O. J. BROOKS, M. D.
Huntsville

Undulant fever is characterized by febrile attacks which persist for weeks or months with many remissions. In the first ten or fifteen days patients complain of pain in the back and extremities with chills, often followed by high temperature and profuse night sweats which necessitate frequent changes of linen in one night. The patient usually feels fairly comfortable on arising in the morning, followed by extreme weakness in the afternoon. It is caused by *Bacterium melitensis* and *Bacillus abortus* of porcine or of bovine origin, and is supposed to be spread by milk from goats and cows or from direct contact with cattle or hogs. Undulant fever is no new disease; no doubt it has been in existence for hundreds of years. The first appearance so far as is known was on the Island of Malta, which gives it the name Malta fever. However, most of our American authorities use the term undulant fever. It may be of interest to give a bit of its early history.

Malta fever is an ancient disease. Hippocrates described a long continued fever with short apyrexial intervals lasting four months which in all probability was Malta fever. During the eighteenth and nineteenth centuries Howard Hennen and Davy described a disease which appears to have been Malta fever. Much confusion was caused in Malta during the Crimean War by the presence of both Malta and typhoid fever. The disease was first recognized in Malta as a specific disease. Bruce in 1886 proved that Malta fever had a definite etiology when he discovered in the spleen a micrococcus which bears his name. A year later he cultivated the organism and was able to reproduce the disease in monkeys by inoculation. In 1891 he obtained the organism from blood which was aspirated from the spleen during life. In 1898 Wright and Semple showed that a diagnosis could be made by agglutination tests. In 1904 the British Admiralty, the war office and the civil government of Malta appointed a

commission to investigate the disease. This commission showed that the organism leaves the body for the most part in the urine and that it is capable of existing for a long period outside of the body. It was discovered that the milk of many goats would agglutinate the micrococcus, and later the germ was isolated from goat's milk. Manson cautions that unless serum tests are made with fresh blood and proved cultures erroneous results may follow. Prophylactic measures have resulted in reduction of undulant fever among the British troops in Malta from 643 cases in 1905 to one case in 1910, and the disappearance of the disease since that time except for the disruption created by war, which made hygienic measures impossible of application.

Analysis of the possible sources of the infection of the reported cases gives evidence of the danger of raw milk containing *Bacillus abortus*. One hundred and nine of 155 cases reported have a history of drinking various amounts of raw milk from which in the majority of instances *Bacillus abortus* was isolated. In 35 cases no information was obtained as to whether or not the patients had been drinking raw milk. Only 7 of the cases of undulant fever had been directly in contact with swine or had been on farms where abortion disease in swine had occurred.

Undulant fever is rarely seen in childhood under six years of age. Why children are not so susceptible as adults cannot be satisfactorily explained at this time. It is certainly not due to the fact that children drink less milk than adults. However, when calves were fed infected milk it was found, as a rule, that the organism would not remain permanently in their tissues after the source of infection had been removed. It is my opinion that the non-presence of this disease in children is due, first, to natural immunity inherited from the mother (of unknown duration); and, second, to the pasteurization of milk given artificially fed babies and children. It is possible there are many cases of undulant fever in the State at this time that are not diagnosed as such. A positive diagnosis of undulant fever can be made only by serologic tests of the blood serum for *Bacillus abortus* or *Bacterium melitensis*. I would suggest and urge any physicians who have cases of

*Read at a meeting of the Madison County Medical Society, June 14, 1932.

doubtful diagnosis of continued fever to take blood specimens from the veins in sterile tubes and send immediately to the State laboratory for agglutination tests for undulant fever.

Since the text-books give but very little information of value on undulant fever, a review of the literature by the leading physicians who have done most of the special investigations of the disease will reveal that the consensus of opinion is that most cases can be traced to milk from cows infected with *Bacillus abortus*. In view of these facts it would seem necessary for the State Board of Health, the County Health Officers, and the State Live Stock Board to make a strict inspection of all dairy herds and all pasteurizing plants so that the health of the people may be safeguarded. Pasteurization of milk is one of the best measures for preventing undulant fever, but health officers should keep all pasteurizing plants under strict inspection: first, as to the source of their milk supply; second, as to proper methods of pasteurization; and third, as to adequate refrigeration immediately after pasteurization and until delivery to the consumer.

REPORT OF CASE

The patient came to see me on the afternoon of April 9 complaining of chilliness, extreme weakness, intense frontal and occipital headache, and general aching with special reference to back and lower extremities. His chief symptoms for several weeks had been fever, occipital headache, troublesome bronchitis, irritability, and constipation. Ulcers of the mouth contributed to his discomfort.

Laboratory examinations were negative for malaria and typhoid. Urinalysis revealed nothing. The leucocyte count was 6900.

From April 10 until early in June the patient had an elevated temperature ranging as high as 103.6°. On April 23 serologic examination proved positive for undulant fever. Undulant fever vaccine (Jensen-Salsbury Laboratories, Kansas City, Mo.) was administered, $\frac{1}{4}$ cc. the first dose, $\frac{1}{2}$ cc. for the second, $\frac{3}{4}$ cc. for the third, and 1 cc. for the last. There was a marked reaction after each injection of the vaccine. The temperature gradually declined each day until it was normal both morning and evening. On the afternoon of the seventh day after the last dose of vaccine was administered there was an elevation of temperature to 99.6° in the evening. It was deemed advisable to give some more of the vaccine, $\frac{1}{2}$ cc. for the first injection, $\frac{3}{4}$ for the second, and 1 cc. for the last. After the last there was a violent reaction, the temperature reaching 106.6°. Twenty-four hours

following the last injection he had numerous bloody discharges, which gradually disappeared. His temperature gradually declined until it was subnormal both in morning and evening. The headache disappeared, the appetite improved, and the ulcers in the mouth disappeared. He made a gradual improvement daily and was discharged June 10, 1932 as a convalescent.

TRANSURETHRAL RESECTION OF THE PROSTATE GLAND*

CASE REPORT

By

A. I. DODSON, M. D., Richmond, Virginia and
JOSEPH B. GRAHAM, M. D., Talladega, Alabama

There is probably no field in medicine in which more advances have been made in the past twenty years than in prostatic surgery. Proper preoperative preparation of the patient and careful postoperative care have almost been standardized and have resulted in a great decrease in operative deaths. Any step or procedure tending further to lower that mortality rate well deserves the earnest attention of our profession.

In the sixteenth century Ulassa first attributed one cause of bladder obstruction to enlargement of the prostate gland. Guthrie in 1834 and Mercier in 1884 devised a catheter carrying a blade for incising the gland. The greatest fault with their instruments was postoperative hemorrhage.

Later attempts were made by Chopart, John Hunter, Bilroth, and others to "tunnel" the gland. Bottini improved the usual operation by the addition of cauterization, the so-called "galvanocautery incisor". In this country Chetwood first described "contracture of the bladder neck". He treated this lesion with a modification of the Bottini instrument through a perineal incision.

In 1909 Hugh Young devised the punch method, which is the forerunner of all transurethral resections. Various instruments have been devised by Caulk, Day, Collins, Leys, and others, all having the disadvantage of not being able to remove an adequate amount of tissue to overcome all

*From the Department of Genito-Urinary Surgery, Medical College of Virginia.

*Read at the August 1932 meeting of the Talladega County Medical Society.

**Formerly Resident Surgeon, Hospital Division, Medical College of Virginia.

types of obstruction. With the new McCarthy instrument or the Davis modification of the Stern instrument we find the main essentials fulfilled, namely, sufficient tissue can be removed under direct vision and with satisfactory control of hemorrhage.

Medical literature at present is filled with enthusiastic reports of intra-urethral resection cases. Davis with his modified Stern instrument has been a master in this field. He reports 399 cases with no direct mortality from the operation. He believes resection preferable to prostatectomy because of a lower mortality rate, lessened hospitalization and better results. He has had one recurrence in three years and cites intra-urethral resections he has done in twenty-three cases that had previously had the usual prostatectomy.

Caulk has long emphasized the fact that with his cautery punch operation the cut edges retract and, after edema subsides, the gland is smaller and obstruction does not recur. McCarthy feels that resection in huge hypertrophies is not the operation of choice. Martin and Day concur in this opinion. Probably the indications for resection lie mainly in those cases with middle lobe obstruction, with small fibrous glands, with fibrosis of the bladder neck, or with carcinomatous glands as a palliative measure to relieve obstruction. Intra-urethral resection appears a means of aiding many who could not undergo the more formidable types of operation.

Over-emphasis has been placed on the factor of shortened hospitalization. All cases for resection should have the same careful preoperative care with decompression, bladder drainage, blood chemistry, and renal function studies, that is ordered for the usual prostatectomy.

We wish to report two recent cases in which resection of the prostate gland was done by the transurethral method, though realizing that a careful follow-up of the cases is really necessary to complete the report. These cases are too recent to determine what the end results will be, but the obstruction was relieved and adequate bladder control with a normal stream was present on discharge from the hospital. We believe that neither case could have withstood the usual prostatectomy.

REPORT OF CASES

Case 1. M. C., a colored male, fifty-eight years of age, was admitted to the medical service of St. Philip Hospital on March 2, 1932, complaining of dyspnea and edema of six months' duration. There had been no pain on urination but there were frequent voidings of small quantities of urine and a marked decrease in size of the stream. Chief findings on physical examination pointed to marked cardiac decompensation with anasarca. The heart was enlarged and a systolic murmur could be heard at the apex. There was present a slow fibrillation. Blood pressure was 180/110. Paracentesis was done the day of admission and 7000 cc. of fluid was withdrawn and three days later 3500 cc. removed. The patient was unable to void and an indwelling catheter was inserted followed by the usual urinary antiseptics and bladder irrigations. Electrocardiogram showed a slow fibrillation. His condition improved slowly and fifty-one days after admission cystoscopy was done, which revealed a median-lobe hypertrophy with a trabeculated type of bladder. Six days later transurethral resection was done with the Davis resectoscope and the Wappler high frequency machine under spinal anesthesia (100 mg. of novocain). The middle and part of the left lobe of the prostate were removed. Due to the burning out of an electrode it was necessary to complete the operation at a second stage, which was done eight days later with the McCarthy instrument. A good channel was completed. An indwelling catheter was inserted at operation and removed two days later. The patient was up on the day after operation. His temperature reached its highest peak (100.4°) the second postoperative day. He was discharged nine days after the second operation.

Case 2. J. F., a white male, sixty-seven years of age, was admitted to the surgical service of Memorial Hospital on May 9, 1932, complaining of difficulty and frequency of urination, a nocturia of ten or twelve times, difficulty in starting a stream, and dribbling at the end of urination. For one week he had noticed a mass the size of a grapefruit in the right lower abdominal quadrant which was painful only when the bladder was full. He also complained of dyspnea. There was no edema. Essential findings on physical examination were an enlarged heart with an irregular rate and a systolic murmur at the apex. Blood pressure was 160/100. No signs of decompensation were present. The prostate was enlarged about six times the normal size but was symmetrical in shape. There was a mass in the right lower quadrant of the abdomen which disappeared after 1700 cc. of residual urine was removed from the bladder. An indwelling catheter was used for drainage. Blood non-protein-nitrogen on admission was 64 mg. per 100 cc. and this fell to 41 mg. following six days of catheter drainage and the forcing of fluids. Cystogram confirmed the diagnosis of diverticulum of the bladder. After sixteen days of drainage operation was done under spinal anesthesia (100 mg. of novocain). 11.2 grams of prostate was removed by the transurethral method with the McCarthy instrument. The patient's postoperative course was

rather stormy. There was infection of the leg with abscess formation, which necessitated drainage. This was probably not related to the operative procedure. The patient desired to go home and left the hospital against advice eleven days after operation. Regardless of his stormy course he was able to be in a chair three days after operation.

Conclusions: Two cases of transurethral resection of the prostate gland are reported, which due to cardiorenal disease could not have been subjects for a more radical operation.

Transurethral resection is the operation of choice in selected cases, but the same careful preoperative preparation and post-operative management are as necessary as in other types of prostatic surgery.

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SPOROTRICHOSIS*

H. R. COGBURN, M. D.
Mobile

Sporotrichosis, Schenck's disease, and chronic abscess are terms used to designate a condition that has been reported by various authors and has been definitely established by Schenck to be due to a fungus, the *Sporotrichum*. Schenck first discussed this condition in an article in the Johns Hopkins Hospital Medical Bulletin in 1898. It is said to occur in the United States chiefly in the Mississippi Valley, and is thought by doctors generally to be a rather rare disease.

*Read by title at the annual meeting of the Association, Mobile, April 21, 1932.

It has been my privilege to see several cases of this disease and I wish to refer very briefly to just a few of them. We have had only one case that came directly to us before being referred, and this one exception first consulted the family physician and then later of her own volition came in to see us. The various diagnoses made, and the wide range of therapy instituted by the referring physicians would seem to bear out the authors in their allusion to the similarity of this disease to various other conditions confronting the practitioner.

The first case I wish to refer to was that of a negro man, aged 35 years, a resident of Mobile County and a laborer in a saw mill. His condition had persisted for eighteen (18) months, and he was at various times under the care of physicians. His condition was diagnosed as furunculosis by the referring physician, after taking a Wassermann and getting a negative report. The patient had received vaccines and ichthyol salve locally. At the time of examination he showed three healed lesions on the back of the right hand and seven indolent, open ulcers on the right forearm and arm, the lesions extending in a line almost up to the insertion of the deltoid muscle.

The next case was a white man, aged 55 years, a farmer, and a resident of the Mississippi gulf coast. This man had consulted his physician six weeks previously for three nodules and one open sore on his right hand and wrist. It was thought he had an ordinary pyogenic infection and he received treatment along this line. When he came to us he had several open ulcers on the hand and forearm and one or two nodules.

Another case was that of a white man, aged 30 years, a farmer, and a resident of Monroe County, Alabama, who was referred for the treatment of a large varicose ulcer on the left leg. The leg was very edematous and painful. It presented a large ulcer on the outer aspect of the lower third, and various smaller ulcerating lesions. The limb was badly irritated from the application of strong medicines and many varicose veins were in evidence. This man was put in bed for a few days and soothing applications were instituted. The edema was overcome and the ulcer responded.

ed to treatment with a gelatin cast. At the time the patient was ready for the third cast it was noted that he had five indolent ulcers and one nodule on the left leg, extending in an almost straight line from the ankle up toward the knee and occupying the lower two-thirds of the leg. Cultures were taken from these lesions and the *Sporotrichum* was demonstrated. After the fourth cast was removed treatment for sporotrichosis was instituted.

The next case was that of a farmer, aged 40 years, a resident of Clarke County, Alabama. For several months he had complained of sores on his left hand and forearm. His physician eliminated lues and then gave injections of manganese butyrate, furunculosis vaccine, and local applications directed at a pyogenic organism invasion. There was no improvement. The doctor thought of tuberculosis and sent the patient in for diagnosis and suggestions as to treatment.

A white woman, aged 25 years, a housewife and a resident of Mobile County, consulted her doctor about an ulcerated spot on her right foot that had occurred without apparent cause, had persisted for more than a month, and had not responded to her treatment at home. A diagnosis of water poison or dew poison was made. She was treated by the physician for about a month after which she came in to see us without being referred. When we saw her she had one healed lesion on the top of the right foot and three open lesions extending in a line up and across the outer side of the ankle. A diagnosis of sporotrichosis was made and treatment instituted. The lesions responded satisfactorily.

We were not able to demonstrate the *Sporotrichum* in all these cases and in fact made no effort to do so in all of them. A clinical diagnosis was made in each case from the history of the case, the typical arrangement of the lesions, the indolent ulcers with overhanging edges filled with unhealthy granulations, the viscid sero-purulent discharge, the purplish red nodules and the purplish red areas of skin around the ulcers.

Our treatment of all cases was identical, consisting of potassium iodide internally and diluted Lugol's solution applied locally

as a continuous wet dressing. Every case yielded to treatment satisfactorily.

These conditions have come to us with such diagnoses as impetigo, furunculosis, water poison, "infections", syphilis, tuberculosis, cancer and others.

It is my observation and belief that the incidence of sporotrichosis in this section of the country is greater than has been supposed and that its detection is attended with some difficulty.

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THE SIMPLE MASTOID OPERATION*

JOHN A. KEYTON, M. D.
Dothan

The simple mastoid operation is of comparatively recent origin, although modifications of the operation we today know as the simple mastoidectomy have been done for many years. In 1874 Schwartze, with his co-workers, established what is commonly done now as the classical mastoidectomy.

In any consideration of this operation from the standpoint of choice one must consider the various needs for surgical intervention in disease of the mastoid antrum with its concurrent disease of the pneumatic cells of the temporal bone. In one case we may decide that a complete exenteration of the process need be undertaken, even into the deeper portions of the petrous portion of the bone, as in those cases in which we see Gradenigo's syndrome, or some influence on the seventh nerve; for although this nerve might show ill effect from a simple antral infection it is rather more probable that we will see deep involvement of the bone when we observe surface evidence of facial nerve disturbance. In another case we may decide that simple drainage of the antrum is sufficient and it is of this large mass of mastoid infection which we desire to speak.

There are many factors to be considered in connection with surgical procedure in this region, for we realize that the operation is undertaken for several reasons. The first is the saving of life; second, the restoration of the anatomy to a normal state as

*Read before the Association in annual session, Mobile, April 21, 1932.

quickly as possible; and, finally, the return of the patient to normalcy with as little scarring as possible to show for his adventure into the realm of surgery.

Radical surgery is fast falling into disrepute and the patient personnel of our several practices is beginning to demand of us the finer results of which they have heard or read. It behooves the practitioner to study these possibilities with the idea in mind of pleasing his patient as well as improving his individual technic.

Let us consider the pathology of the mastoid infection and its modes of occurrence. We first see, in the vast majority of cases, an infection of the middle ear cavity as a result of some ascending infection by way of the eustachian tube from the nasopharynx. The offending organisms in this invasion are usually very much mixed, but we see chiefly the staphylococcic group, with the pneumococcus and occasionally other organisms in the more vicious infections. The organism invades the mucous membrane lining these organs causing infiltration with its consequent swelling before suppuration occurs. The acute process may cause ulceration of the tympanic membrane (primary) and so drain through this opening into the external canal without presenting a great deal of involvement of the additus or the mastoid antrum. However, we usually see considerable involvement of these structures in any middle ear involvement.

If the additus becomes so badly swollen as to block the canal from the antrum or if the eustachian tube become closed and the tympanic membrane resist the inflammatory process long enough, our patient presents himself with a well defined picture of mastoid infection. It is sometimes possible to cool off this inflammatory process and obtain healing with proper hygienic care and the use of the means at hand; such as ice or heat to the affected region, cleansing and medication to the cavity of the middle ear and early opening by means of positive or negative pressure of the eustachian tube.

When we come to consider the operative measures we shall take we must necessarily be governed by the dictates of our own judgment in the individual case as we see it. We feel, however, that if the condition

is seen early and a positive diagnosis is made of suppuration in the antrum we should without delay open this cavity for drainage. It is felt that the hazards of early operation are small by comparison with those the patient takes when he waits for some definite urge for surgical intervention, as vertigo, facial nerve involvement, intracranial manifestations, etc. The longer he carries his infection the deeper it may go into the tissue and so convert a simple procedure into a very radical and uncertain one insofar as the patient's future is concerned.

The dangers attending the early simple mastoidectomy are slight in the hands of the accustomed operator, and no other surely would attempt it, especially when we resort to the use of a local anesthetic and so do not subject our patient, who may already have a tracheobronchial involvement from his upper respiratory infection, to the useless hazards of ether or other media of general narcosis. We shall undertake to remind the specialty of the old and well taken dictum of "simple drainage for early cure" and in presenting this rejuvenation of an old usage we hope that we may be able to convince the practitioners of the unwisdom of delay and then of radical surgery.

For the past eight years it has been my custom to do as little surgery in the mastoid bone as possible to effect results, for several reasons: namely, there is grave danger of severe injury in this particular anatomy which we need not undergo; simple drainage will usually effect results without the large excavations made behind the auricle; and lastly, the patient recovers quickly as he has not so much added trauma from surgery and in his recovery has no deforming marks to worry him later. This cosmetic reason is important in dealing with most patients, for all of us, no matter how unfortunate we may be in being homely, have a large amount of vanity which we do not like to see outraged by the addition of unsightly scars.

We shall not compare older methods, or rather more radical methods, with this technic as time is very limited but we shall undertake to outline the essential points of what we are pleased to consider a sufficient operation. The skin wound is short, being from two and one-half to three centimeters

in length and the superficial wound is crossed at intervals with horizontal scratches for later apposition of the skin edge. Our cortex is removed very gently with the gouge and when we have entered the first pneumatic cells we lay aside the gouge for a small sharp curette with which we rapidly enter the mastoid antrum. After ascertaining that we are indeed in this cavity we prove it by posterior irrigation with normal saline.

In entering this cavity we have an opportunity of studying the general condition of the osseous tissue which we encounter and so are able to pass positive judgment on the advisability of more radical surgery than we had anticipated; we may at any time remove diseased tissue but it is rather tedious to replace that which we have already removed which was not diseased. When we have assured ourselves of adequate drainage of the antrum and have explored cells adjacent to our entrance tunnel then we carry our bony dissection far enough into the tip to assure drainage from the most dependent point. Instillations of mercurchrome or other suitable germicidal agent into the wound follows thorough irrigation of the wound cavity, the antrum, and of the middle ear.

After this thorough cleansing and medication we close our wound (skin) with silk-worm sutures closely enough spaced to get good approximation of the wound edges, bringing our gauze wick out at the most dependent point. The wound is dressed daily, or oftener if it is considered necessary for absolute cleanliness of the region, and as soon as possible the auricle is excluded from the dressing for frequent irrigation and medication of the middle ear space. When our patient has become well we find that he has no scarring, there has been no disturbance of his hearing, and he is altogether in good condition.

A series of one hundred mastoidectomies done by this method gives the following interesting information:

Time between operation and cessation of drainage (averages are taken)—four and one-half days.

Time expiration before sutures may be removed and patient dismissed to care for himself—ten days (at this time the eustachian tube is inflated and hearing checked).

Duration of time from operation to patient's return to business in good condition—twelve days.

There is a great deal of satisfaction in having patients return to you at a later time and tell you that you did a mastoid operation on them some years before and find yourself unable to detect any scar. We feel that with the least trauma we may obtain results the better our patient will be later. I know of nothing more unsightly than a large depressed scar behind the ear of a patient from an old mastoid operation.

Of course there are exceptions in which radical surgery must be done and we must judge these issues for ourselves, but when we may be able to accomplish results with simple drainage then we should do nothing beyond that.

A careful watch on the white blood differentiation with particular attention to the young polymorphonuclears will afford us a most excellent criterion as to the patient's progress in healing. We may be able to stimulate this defense medium by the injection, subcutaneously, of milk or other foreign protein or, if we have felt the need, by giving an autogenous vaccine which has been prepared from a culture made at operation.

The appearance of any signs of complications, such as lateral sinus infection or intracranial involvement will of course call for an immediate return to the operative site and a thorough exenteration of the process but we have not seen a case as yet which was selected for this type operation which later presented any of these untoward signs. We have seen one case seven years after operation who had a discharging ear on the operated side but since the ear had been dry for six years we do not consider that there was any connection between the first infection and this later one.

SUMMARY

1. The simple mastoid operation should be done early in the course of the disease to avoid the dangers of delay while waiting for more definite indications for surgery.

2. The operation of choice should be one which will inconvenience the patient the least and which will assure as early recovery as it is possible to procure.

3. It is not necessary to perform mutilating operations in this region if early diagnosis is made and the surgeon is not afraid to risk his judgment on his diagnosis.

4. A simple drainage will cure the disease usually and leave no scarring to mark the site of trauma and will materially lessen the patient's stay in the sick-room or on the invalid list.

5. The operation discussed can be done in all cases with a local anesthetic and so lessens the hazards the patient must take while a more comprehensive dissection must usually be performed with the aid of general narcosis which within itself sometimes proves fatal to the patient.

MALARIA AND PARESIS

J. N. BAKER, M. D.
Montgomery

The therapy of paresis by means of an induced and controlled attack of malaria is now widely recognized as a procedure of considerable benefit. As originally introduced, and as yet most widely practiced, the malaria inoculation is artificially effected by the transfer of blood from either a naturally infected case of malaria or a case of paresis experiencing this form of therapy. Another method of inoculation is effected by the direct application of infected mosquitoes to the paretic patient, thus inducing the disease in a natural manner. The scarcity of persons trained in malaria parasitology, together with the technical difficulties to be surmounted, are probably responsible for the very slight degree to which this latter practice has been utilized. Yet in this manner several of the most serious objections to the inoculation by means of blood are avoided.

The Florida State Hospital, located at Chattahoochee, is one of the few institutions for the care of the insane in this country where malaria inoculations are effected by the direct application of infected mosquitoes to the individual patient. This facility is made possible through the collaboration of the Station for Malaria Research, and being sponsored by the International Health Division of the Rockefeller Foundation. This most interesting and scientific study is being conducted under the directorship of Dr. Mark F. Boyd, a malariologist of international note. The experience so far gained in this institution points to the interesting fact that, owing to a matter of racial tolerance, the employment of *benign*

tertian malaria is practically only available to *white* patients. Furthermore, while admittedly a heroic form of therapy, yet if care is taken to select patients in good physical condition, the malaria infection may be permitted to undergo its natural evolution with very little risk to the patient. Benign tertian strains differ considerably in their virulence, and the station is fortunate in possessing a strain that is really benign and is readily controlled, if indicated, by the judicious use of quinine.

Malaria therapy, induced in the above natural manner, is now available under certain circumstances to the physicians of Alabama in the treatment of their private patients. Needless to say, such patients should be hospitalized in screened wards while experiencing malaria therapy and, on the termination of the malaria attack, be effectively treated so that on their release they will not become carriers for the dissemination of malaria. No charges are made for the inoculations. Through the courtesy of Dr. Boyd, the facilities of this station have been placed at the disposal of Alabama physicians, through the State Health Officer, for private cases. Any physician desiring to avail himself of the privileges extended at this station should transmit such request for appointment through the State Health Officer.

Patients must go to Tallahassee at their own expense. The inoculation and verification of the infectiousness of the mosquitoes employed will require barely half an hour. The director of the station requires that he be informed of the onset of the malaria attack, and will advise the attending physician of the proper care of the patient during the evolution of the malaria infection.

The Typhoid Carrier—Except in rural areas typhoid fever has now come to the point where it will be affected very little by better sanitary engineering and food control. Where these safeguards exist in our cities, further reduction of the disease becomes an epidemiologic rather than an engineering problem, because in most of the present cases of the disease where the source of infection is traced it is found to be due to direct or indirect contact with some carrier, or to food or water contaminated by a carrier. In other words, if the incidence of typhoid fever is to be further reduced among our urban population, health officials must discover the carriers of the disease and prevent them from spreading the infection.—*Knight, New Orleans M. & S. J., March 1933.*

THE JOURNAL
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Office of Publication
519 Dexter Avenue.....Montgomery, Ala

Subscription Price.....\$3.00 Per Year

March 1933

RECENT TRENDS OF DIPHTHERIA

The epidemiology of diphtheria shows it to be increasing in Europe; and this increase has been apparent for the past five years. The mortality also shows an increase that brings it to almost that experienced before the use of immunization. France alone in 1930 reported 3,300 more cases than in 1929, this in contrast both to the mortality and morbidity found in this country. Some cities report no cases and a number report no mortality. The rate experienced in 1930 is almost fifty per cent lower than in 1925.

In European epidemics the refractory cases tend to be pharyngeal or nasal in character. In the infant faucial diphtheria is rare. Umbilical lesions are reported by Signey and Bruce, and by Montgomery.¹ The former state that the lesion resembled a cellulitis with swelling. The latter has collected forty-three cases including his own. He divides them into three groups: (1) those in which the only evidence of infection is a positive culture from the umbilicus; (2) those with a slight caseous deposit; and (3) those with extensive evidence of infection. In his own case death

followed myocarditis and paralysis of the diaphragm.

Grunke² concludes that one-half the fatal cases are due to cardiac damage while Chailier and Fremont³ believe that it does not constitute over ten per cent. The latter have made electrocardiograms showing that heart block and ventricular fibrillation are the two arhythmias found; and both presage a poor prognosis. Experimentally Duff has produced medial degeneration of the aorta in rabbits by the administration of diphtheria toxin.

In the treatment of this disease Yarotskiy gives 10,000 units of antitoxin every day until the toxic symptoms become minimal or disappear. Others give large doses, though Lietchtenstein says this has not decreased the mortality rate. Schwieter and Noel have suggested a treatment in which dextrose and insulin are given in addition to the diphtheria antitoxin. Benn, Hughes and Alstead⁴ report a reduction of 13.4 per cent in a series of eighty-nine cases using this method. However, repeated blood analyses are necessary, which will limit the usefulness of this procedure. Phylaxis by means of chloroform anesthesia to impregnate the lipoids of the nervous system, thus keeping the toxins from becoming fixed, is advocated by Cruchet⁵, who also uses antitoxin.

For prophylaxis Harrison⁶ lists the advantages of toxoid over toxin-antitoxin: (1) it is twenty to thirty per cent more effective; (2) it contains no animal serum or protein; (3) there is no general or local reaction in children under seven; (4) there is no free toxin; and (5) it is more stable. Hunt found that 28.1 per cent of those patients receiving the toxin-antitoxin mixture, in a series of 2,859 administrations, had serum sickness. The reaction appeared in a few minutes to thirty days.

The safety of the method of Besredka in desensitization is questioned by Woldblatt. The time to administer the immunizing agent is after nine months of age. Blum has found that about twenty-five per cent below this age fail to respond to immuniza-

1. Am. J. Dis. Child. 40:968-1930.

2. Zeit. fur Klin. Med. 120:40-1932.
3. Ab. J. A. M. A. 98:1948-1932.
4. Lancet 1:283-1932.
5. Brit. M. J. 1:128-1932.
6. Am. J. Pub. Health, 12:17-1932.

tion. Thus all children should have a Schick test 3 to 6 months after receiving the prophylactic treatment.

That immunized children in private practice have a diphtheria rate of only 0.8 per cent was reported by Harrison⁷. Out of the 2,391 cases collected by Chaliér and Rougier⁸ only sixteen had received previous immunization. Dudley⁹ states there are twice as many carriers of virulent diphtheria bacilli among the Schick-susceptible patients.

In the preparation of a pure toxoid, Wadsworth, Quigley and Sickles¹⁰ precipitated the material with acetone at 4° C., and Wells, Graham and Havens¹¹ used aluminum and potassium sulphate. The latter employed a single injection of this concentrate in the immunizing of 98 Schick-positive children. In eight weeks ninety-two (94 per cent) of these children had negative reactions.

The next decade should tell the true story of the effects of immunization. It is generally known that at the time this work was begun, diphtheria was receding. The increase in European statistics would lead one to look more critically upon our present methods. With a spread from the Continent to England last year, doubtless America's turn will come next. Over twelve years ago, Havens¹² suggested that there were two types of *C. diphtheriae*. This phase of the problem is being taken up and investigated by recent workers; some are advising the use of a polyvalent serum.

Until something more definite is learned, one hundred per cent immunization with the means at hand should be the goal. Godfrey brings out the fact that if thirty per cent of the children under five are immunized the diphtheria incidence decreases. This is not true even when fifty to seventy per cent of the children over five receive the prophylactic treatment. The unrecognized case is the most dangerous and hence the physician should be on the alert at all times, considering every case of sore throat as a possible diphtheritic infection.

M. E. S.

Current Comment

ABOUT THIS DEPRESSION

John H. Peck, President, National Tuberculosis Association, said recently: Care of the needy is the demand of the day. Practical people are suggesting that problems not immediately concerned with the need for bread be shelved for the time. To do that means postponement of a debt, the payment of which, when due, will be demanded with compounded interest. We, the custodians of the gains won during twenty-seven years of battle against tuberculosis, have no right to sacrifice those gains. They belong to generations to come.

A child grows up but once. We cannot later repair the scars inflicted now. We can prevent them. The man-on-the-street measures the menace of tuberculosis by the height of the death rate—which continues to decline. He is satisfied to feed the hungry and let tuberculosis take care of itself for awhile. But you and I use a more sensitive barometer. Knowing something of the manner in which tuberculosis develops, we can "see" the damage being wrought in the bodies of children. What we see is perhaps less tangible, but it is just as real as the inexorable mortality statistics to be published later. If we let things slide now few will be the wiser—until time registers the fruits of our neglect. Then it will be too late.

Tuberculosis and poverty have long been regarded as closely associated. But our latest knowledge teaches that tuberculosis is merely a by-product of poverty. It can be dissociated from poverty. Our particular task, in addition to any other responsibilities we may be assuming in this depression is to keep hammering away at tuberculosis. The strategic sector of the line is contact. In spite of poverty, the transmission of the disease can be prevented.

The ultimate economy of this year's Early Diagnosis Campaign justifies your faith at this time when distressed people are thinking only of the moment.

7. South. M. J. 24:691-1932.

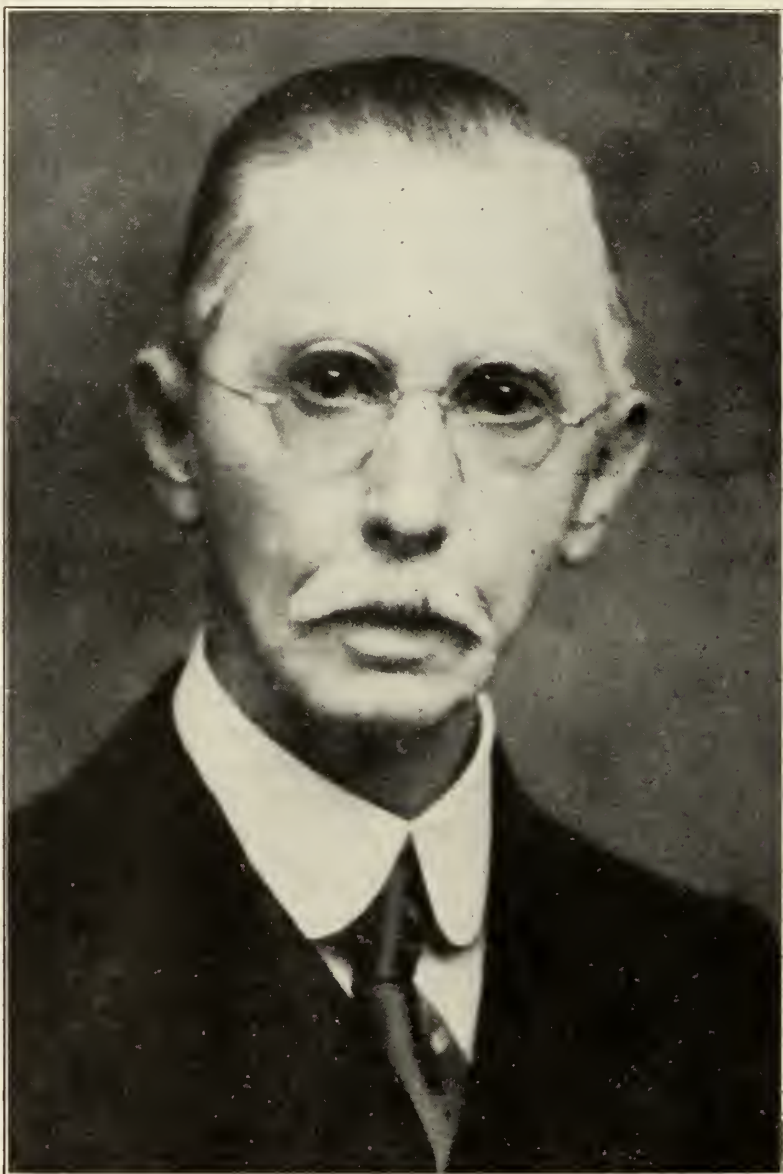
8. Ab. J. A. M. A. 98:1418-1932.

9. J. Hyg. 32:143-1932.

10. J. Exper. Med. 55:815-1932.

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12. J. Infect. Dis. 26:338-1920.



S. KIRKPATRICK
Selma
President, 1932-'33

PROGRAM

SIXTY-SIXTH CONSECUTIVE ANNUAL SESSION OF THE MEDICAL ASSOCIATION OF THE STATE OF ALABAMA, MONTGOMERY,
APRIL 18-21, 1933

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PROGRAM

First Day, Tuesday, April 18

Morning Session

1. Call to order at 11 A. M. by the President—
S. Kirkpatrick, Selma.

2. Invocation—

Rev. Donald MacGuire, D. D., Pastor, First
Presbyterian Church, Montgomery.

3. Addresses of Welcome—

Hon. B. M. Miller, Governor of Alabama,
Montgomery.

Hon. W. A. Gunter, Mayor, City of Mont-
gomery.

Dr. Robert Parker, President, Montgomery
County Medical Society.

4. The President's Message—

S. Kirkpatrick, Selma.

5. Report of the Senior Vice-President—

K. A. Mayer, Lower Peach Tree.

6. Report of the Vice-President Northeastern
Division—

W. M. Salter, Anniston.

7. Report of the Vice-President Southeastern Division—
G. W. Williamson, Hartford.
8. Report of the Vice-President, Northwestern Division—
E. D. McAdory, Cullman.
9. Report of the Secretary—
Douglas L. Cannon, Montgomery.
10. Report of the Treasurer—
J. U. Ray, Woodstock.
11. Report of the Committee of Publication—
Fred Wilkerson, Montgomery, Chairman.
12. Reports of Standing Committees:
 - (a) Mental Hygiene—
T. C. Cameron, Faunsdale, Chm.
 - (b) Prevention of Blindness—
M. R. Moorman, Huntsville, Chm.
 - (c) Physicians-Druggists—
N. G. James, Hayneville, Chm.
 - (d) Maternal Welfare—
J. R. Garber, Birmingham, Chm.
 - (e) Military Affairs—
Cabot Lull, Birmingham, Chm.
 - (f) Infant Welfare—
John W. Simpson, Birmingham, Chm.
 - (g) First Aid—
J. D. Heacock, Birmingham, Chm.

Afternoon Session
Tuesday

Call to Order, 2:30 P. M.

Unfinished and Miscellaneous Business

1. The Clinical Syndromes of the Surgical Spleen—
H. E. Simon, Birmingham.
Discussion to be opened by Haywood Bartlett, Montgomery, and T. J. Brothers, Anniston.
2. The Scope of Dermatology—
H. R. Cogburn, Mobile.
Discussion to be opened by Toulmin Gaines, Mobile, and Earle Johnson, Montgomery.
3. Hematuria: Its Great Significance—
Emmett B. Frazer, Mobile.
Discussion to be opened by L. L. Hill, Jr., Montgomery, and J. G. Bedsole, Jackson.
4. Acidemia: Its Relation to Chronic Disease—
J. F. Yarbrough, Montgomery.
Discussion to be opened by T. B. Hubbard and C. G. Laslie, Montgomery.

Evening Session
Tuesday

Call to Order, 8:00 P. M.

Unfinished and Miscellaneous Business

1. Prophylaxis in Labor—
J. R. Garber, Birmingham.
Discussion to be opened by A. E. Thomas, Montgomery, and Julian Palmer, Opelika.
2. Presentation of the President by the Senior Vice-President—
K. A. Mayer, Lower Peach Tree.

3. The President's Address—The Contributions of Medicine to Civilization—
S. Kirkpatrick, Selma.
4. Clinical and Pathological Observations in 2,000 Cases of Cardiovascular Disease—
R. Wesley Scott, Professor of Clinical Medicine, Western Reserve University, Physician-in-Chief, Cleveland City Hospital, Cleveland, Ohio.
Discussion to be opened by H. R. Carter, Jr., Birmingham, and C. K. Weil, Montgomery.

Second Day, Wednesday, April 19
Morning Session

Call to Order, 9:00 A. M.

Unfinished and Miscellaneous Business

1. Hypothyroidism, With Particular Reference to Its Cardiac Complications—
John E. Walker, Opelika.
Discussion to be opened by Seale Harris, Birmingham, and William Hannah, Montgomery.
2. Symposium on Bright's Disease:
 - (a) Nature and Course of the Disease—
James S. McLester, Birmingham.
 - (b) Grades of Severity; Evaluation; Outlook—
Monroe A. Maas, Selma.
 - (c) Treatment—
Fred W. Wilkerson, Montgomery.
Discussion on the symposium to be opened by G. C. Kilpatrick, Mobile, and C. A. Grote, Huntsville.
3. 11 A. M.—Jerome Cochran Lecture—Cancer of the Stomach and Colon—
J. Shelton Horsley, Richmond, Va.
4. The Diagnostic Importance of the Eye—
W. R. Buffington, Professor of Ophthalmology, Tulane University of Louisiana School of Medicine, New Orleans.
Discussants: J. D. Perdue, Mobile; H. B. Searcy, Tuscaloosa; T. F. Huey, Anniston; Job Cater, Montgomery.

Afternoon Session
Wednesday

Call to Order, 2:30 P. M.

Unfinished and Miscellaneous Business

Announcement of Vacancies in the College of Counsellors.

1. Coeliac Disease—Chronic Intestinal Indigestion—
Robert Parker, Montgomery.
Discussion to be opened by W. M. Salter, Anniston, and N. B. Cannady, Dothan.
2. Incidence of Mental and Nervous Manifestations in Internal Medicine: Review of One Hundred Cases—
Harry M. Simpson, Florence.
Discussion to be opened by W. J. Callaway, Florence, and W. M. Faulk, Tuscaloosa.

3. Thomsen's Disease: A Clinical Study—
Hugh J. Morgan, Professor of Clinical Medicine, Vanderbilt University School of Medicine, Nashville.
Discussion to be opened by Groesbeck Walsh, Fairfield, J. Alto Ward, Birmingham, and James S. McLester, Birmingham.

4. The Mechanism and Significance of Heart Pain—
J. Harold Watkins, Montgomery.
Discussion to be opened by J. E. Hirsh, Birmingham, and L. W. Roe, Mobile.

Evening Session

Wednesday

PUBLIC MEETING

8:00 P. M.

1. Medical Problems Confronting the Medical Profession—
Dean Lewis, President-Elect, American Medical Association, Baltimore, Md.
2. Some Recent Contributions of Science to the Field of Medicine—
Irvin Abell, President, Southern Medical Association, Louisville, Ky.

RECEPTION AND DANCE

10:00-1:00

Montgomery Country Club

Third Day, Thursday, April 20

Morning Session

Call to Order, 9:00 A. M.

Unfinished and Miscellaneous Business

1. A Consideration of Some of the Anatomic Structures Dealt With in Treating Ano-Rectal Diseases—
J. H. Dodson, Mobile.
Discussion to be opened by W. W. Harper, Selma, and Cecil Gaston, Birmingham.
2. Acute Osteomyelitis—
A. S. Frasier, Dothan.
Discussion to be opened by W. D. Gaines, Lafayette, and E. L. Gibson, Enterprise.
3. The Treatment of Fractures of the Ankle—
Robert Carothers, Cincinnati.
Discussion to be opened by Marcus Skinner, Selma, and H. Earle Conwell, Fairfield.
4. Differential Diagnosis of Abdominal Tumors—
Frank K. Boland, Professor of Clinical Surgery, Emory University School of Medicine, Atlanta.
Discussion to be opened by A. C. Jackson, Jasper, and D. C. Donald, Birmingham.

Afternoon Session

Thursday

Call to Order, 2:30 P. M.

Unfinished and Miscellaneous Business

1. The Identification of Cancer Cells in Serous Fluids as a Diagnostic Measure—
Geo. S. Graham, Birmingham.
Discussion to be opened by Cabot Lull and D. S. Moore, Birmingham.
2. The Curability of Cancer of the Right Colon—
Fred W. Rankin, Lexington, Ky.
Discussion to be opened by E. V. Caldwell, Huntsville, and M. S. Davie, Dothan.
3. Congenital Pyloric Stenosis—
S. L. Ledbetter, Jr., Birmingham.
Discussion to be opened by W. R. Meeker, Mobile, and C. W. C. Moore, Talladega.
4. Ununited Fracture of the Neck of the Femur—
J. D. Sherrill, Birmingham.
Discussion to be opened by W. C. Hannon, Mobile, and John A. Martin, Montgomery.

Evening Session

Thursday

Call to Order, 8:00 P. M.

Unfinished and Miscellaneous Business

1. Prostatic Resection—Its Limitations and Complications—
Walter Scott, Birmingham.
Discussion to be opened by Drayton Doherty, Selma, and E. F. Moody, Dothan.
2. The Management of Fractures of the Facial Bones—
John J. Shea, Memphis.
Discussion to be opened by C. A. Thigpen, Montgomery, and J. Gillis Sanders, Mobile.
3. Head and Brain Injuries—
R. E. Semmes, Associate Professor of Surgery, University of Tennessee College of Medicine, Memphis.
Discussion to be opened by W. B. Westcott, Montgomery, and Rayford Hodges, Scottsboro.
4. Traumatic Arteriovenous Aneurysms—
J. M. Mason, Birmingham.
Discussion to be opened by P. P. Salter, Eu-
faula, and C. P. Gay, Geneva.

Fourth Day, Friday, April 21

Sitting as the Board of Health of the State of Alabama

Call to Order, 9:00 A. M.

1. Report of the Board of Censors:
(a) As a Board of Censors.
(b) As a Board of Medical Examiners.
(c) As a Committee of Public Health.
2. Revision of the Rolls.
3. Election and Installation of Officers.
- Adjournment.

THE ASSOCIATION FORUM

(Under this heading will appear, from time to time, as occasion may arise, contributions having a direct bearing on the general policies, functions and interests of the Association. Articles submitted should be of an impersonal nature.)

THE ATTITUDE OF THE AMERICAN MEDICAL ASSOCIATION TOWARD SOCIALISM, INDUSTRIALISM AND INSURANCE COMMERCIALISM IN MEDICINE

By

SEALE HARRIS, M. D.
Life Counsellor, M. A. S. A.
Birmingham

A stunning blow to the art and science of medicine, and to efficient medical service for the public was struck by the highly publicized report of the majority of the Committee on the Costs of Medical Care when they recommended "a basic change in the system of providing medical care for the people of the United States." Their plan consists in the organization of groups of physicians, dentists, nurses and pharmacists to provide community medical centers, to charge "from \$20.00 to \$40.00 per capita per annum, which equals 40 to 80 cents per week" for medical and surgical service. "These centers", the report said, "would provide complete medical services for weekly or monthly fees, with when necessary, some supplementary support from tax funds. Professional procedures would be under the control of the physician, dentists, and other practitioners, and financial responsibility would rest with a board representing the public."

The majority report further recommends that "the cost for community health service be placed on a group payment basis through the use of insurance, through the use of taxation or through the use of both of these methods." In other words the majority report recommends that the practice of medicine should be controlled by insurance companies and politicians; and that doctors be employed for wages, or meagre salaries, just as insurance agents and wardens of penitentiaries are hired; and if per chance the doctor displeases a voter, or does not keep expenses down for the insurance company, he may be fired, and a better politician or a cheaper doctor put in his place. Then he would be left without the opportunity to earn a support for himself and family by his profession.

No doubt Chairman Wilbur, the practicing physicians, public health officials, sociologists, economists and other laymen, who signed the majority report are sincere in their opinion that socialized medicine is not only inevitable but best; and that the "wheels of progress will grind on" regardless as to whether or not they crush the initiative and independence out of the medical profession. The idea of cheap medical service in this period of depression appeals to laymen who are not familiar with medical procedure, and therefore, do not know when they are receiving the best medical attention. The dissatisfaction on the part of the public with our present system of medical practice is not so much the fault of physicians as it is that when a man on small salary, or a member of his family, is ill, he demands a choice hospital room, special nurses and other hospital luxuries when he may not be able to pay for more than the necessities demanded in giving him all the medical service required in his case.

It is but fair to say that there are many admirable suggestions in the majority report that should be considered, and some of them should be adopted by the medical profession, particularly those relating to the prevention of disease; but the quasi state medicine recommended will not be taken seriously by enlightened physicians who are informed of the low standards of practice by the medical profession, and the dissatisfaction of the supposed beneficiaries of governmental medical control as it exists in England, Germany, Austria and Russia.

THE MINORITY REPORT OF THE COMMITTEE ON THE COST OF MEDICAL CARE

Fortunately for safeguarding the public from the most inefficient form of medical practice, and for the maintenance of the lofty ideals and high standards of practice by the medical profession, a minority of the Committee on the Cost of Medical Care had the wisdom and the courage to submit a report signed by nine physicians, and submitted by an eminent practitioner of medicine,

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Dr. Nathan B. Van Etten of New York. The minority report made seven recommendations, one of which in the following sentence effectively disposes of the majority report: "That the corporate (i. e., community center or other organized) practice of medicine be vigorously and persistently opposed as wasteful, inimical to high quality, or productive of unfair exploitation of the medical profession."

It also is fortunate for a gullible public, and for the thinking and far sighted members of the medical profession, as well as for the doctors who see only the advantage of a regular monthly income however small it may be, that the officials of the American Medical Association will unanimously support the minority report which stands for individualism in medicine, and unqualifiedly oppose the plan of the majority which would destroy medical independence. Every American physician should read the editorials and comments on the Committee's report in the December third and December tenth numbers of the Journal of the American Medical Association, as he should also read the complete majority and minority reports of the Committee on the Costs of Medical Care; and resolve to do his full share in giving the public the best possible medical service, making his fees commensurate with the service rendered and the ability of the patient to pay, and at the same time make his influence felt in his county, state and national medical organizations for strengthening and enforcing medical ordinances which oppose unfair competition and low standards of medical practice.

It is hoped that the American Medical Association at the Milwaukee meeting will outlaw the kind of practice recommended by the majority report, while at the same time giving assurance to the public that the progressive medical profession of the United States will see to it that adequate medical care will be given to all classes; the indigent, with the charity that the medical profession has always gladly and freely given to the poor; those of moderate means, who should not be required to pay more than they can afford for the care of their loved ones when sick; and the rich, who can pay and should be charged reasonable fees for medical care.

THE A. M. A. SYMPOSIUM ON CONTRACT PRACTICE

The Annual Conference of Secretaries of Constituent State Medical Associations of the American Medical Association held in Chicago, November 18-19, of last year was devoted to the discussion of contract practice. The complete report of this meeting as published in the December Bulletin, the Official Journal of the House of Delegates of the American Medical Association, makes very interesting reading, particularly since those who participated in the meeting seem to express the attitude of the American Medical Association towards contract practice. Dr. William Allen Pusey, a former president of the American Medical Association, in discussing "The Principles and Policies of the Medical Profession In Its Public Relations", said of "corporate practice":

"Corporate practice controlled by lay business has in exaggerated form the disadvantages of group practice. It has other disadvantages of an entirely different sort and of much greater importance. These grave disadvantages have to do with the fact that they prevent the free choice of physicians, interfere with unrestrained relation between physician and patient, and make the physician an employee, subject to the influence, and often the control of those above him who employ him. Corporate practice can be justified only under conditions where expedients must be accepted, even though in conflict with sound principles. Some situations of this sort are as follows: where an individual or a corporation is legally or otherwise responsible for the present or the future physical condition of the patients; where without the furnishing of the physician by a corporation medical service would not be available to a group or a community."

Dr. G. E. Follansbee, Chairman of the Judicial Council of the American Medical Association, in a paper entitled "Contract Practice—The Octopus in Medicine", was emphatic in expressing his disapproval of contract practice. He said:

"A little thought will convince one that should contract practice become the accepted method of furnishing medical care in those communities suitable to its development, other disastrous effects on the practice and the profession of medicine will occur. Competition on an economic basis will gradually lower the income of the profession until worry over finances will take the place of recreation, study and scientific progress. His enthusiasm lost, the doctor will degenerate into a pill peddler. The idealism of the profession of medicine will fade away, for the character of the profession at large is but the sum of the characters of

the individuals practicing it. The door will be closed to the beginner in medicine except as vacancies occur in the groups holding contracts when room may possibly be found at the bottom of the salary schedule. Advancement, financial or professional, will be slow, for competition compels restrictions on expenses, and vacancies ahead of the beginner will be few because the loss of opportunity for individual competition will bind each employee tightly to the job he holds. The profession of medicine will then lose its attractiveness to high grade men, and the octopus, contract practice, will have wrapped its strangling arms about medicine, the greatest of all professions."

"Advocates of the contract system see only the apparent benefit to people in a lowering of cost because of concentration of practice into groups which can handle a large volume. Some are blind to the ultimate result. Some are not blind but see that such abuses will arise under this system as will force medical care into a function of the state in order to control the quality of service. To such advocates of contract practice it is only a speedy and easy step to their ultimate objective of medical practice by the state or under its auspices."

Dr. R. G. Leland, who recently contributed a series of articles on "New Forms of Medical Practice" to the *Journal of the American Medical Association*, in an article on "Some Dangers of Contract Practice" said:

"Whereas early contract practice was, for the most part, conducted in places remote from populous centers with easily accessible medical facilities, the present contract practice schemes thrive largely in the urban centers where there is no dearth of other means of providing medical care. Formerly, most contract practice was legitimate and designed to meet a humanitarian necessity for which provision could not be made otherwise. Lacking the same motive for contract practice when carried into the midst of communities with sufficient medical facilities, the promoters have today, with few exceptions, embraced commercial motives as their chief defense for the system."

"These newer types of medical practice not only limit free choice of physicians but also create groups, cliques and dangerous dissensions within medical organizations. Contract bargaining, solicitation, misrepresentation and underbidding have resulted in unfair competition among physicians in some sections. Moreover, some of these schemes have been organized and are being operated in direct opposition to, and defiance of, the established principles of ethics of the American Medical Association."

"During periods of economic stress when their incomes are greatly reduced, many physicians grasp at straws for financial assistance. These physicians may adopt contract practice, believing that these schemes offer them a way out of financial troubles. In some sections of the United States, these schemes, developed along commercial lines, have set up a system of competitive commercialism which makes it almost impossible for

the private individual practitioners and the recent graduate to make a living."

Dr. D. A. MacGregor, in discussing "Contract Practice in West Virginia", listed the "good features" and "evil features" of contract practice in his state. The following are some of his conclusions:

1. "The welfare of the sick is the prime consideration in any commendable form of medical practice."

2. "In so far as is practicable, the patient should have freedom of choice in the selection of his physician and hospital."

3. "The quality of medical service should not be jeopardized by either inadequate compensation or an excessive number of patients."

4. "Solicitation of patients is reprehensible. It is undignified. It places the practice of medicine on a commercial rather than an ethical basis. It introduces a form of unfair competition between physicians."

The discussion of the papers by Drs. Pusey, Follansbee, Leland and MacGregor is most enlightening and was participated in by Dr. F. C. Warnshuis, Chairman of the House of Delegates of the American Medical Association; Dr. W. C. Woodward, Director of the Bureau of Legal Medicine and Legislation of the American Medical Association; Dr. Morris Fishbein, Editor of the *Journal of the American Medical Association*, Dr. Olin West, Secretary-Manager, and Dr. E. H. Cary, President of the American Medical Association; and a number of secretaries of various state medical associations.

COMMERCIALIZED HEALTH INSURANCE

There have been many rumors that insurance companies expect to send their "high powered" agents out to sell "health insurance," which provides medical care to their policy holders by physicians whom they will employ in each town and city in the country, and in hospitals which the insurance companies designate, or will own. The discussions by Dr. Woodward and Dr. West probably express the attitude of the medical profession generally toward this form of medical practice. Dr. Woodward said:

"If the representative of any insurance company says that it is waiting on the American Medical Association or for any other body to propose a plan for health insurance, he is talking nonsense. If he means that it is waiting for the American Medical Association or for some other body to sug-

gest some plan whereby the insurance company will furnish directly to its policy holders medical service, nursing and hospital service, all well and good. I can believe that that idea may be in the mind of some such company, but there is no reason today why an insurance company should not engage in the business of health insurance, exactly as it engages in the business of life insurance, provided its charter permits—and probably the charters of most of our great life insurance companies do permit. By that I mean that there is no reason why an insurance company whose charter permits it to write health insurance should not regularly collect premiums, and when a person is sick pay cash to the beneficiary to enable that beneficiary to pay his hospital and other bills. Many of them are doing that now. They are not waiting on the American Medical Association for anything, unless it is for the sanctioning of some plan whereby the company will employ its own physicians and its own nurses and establish its own hospitals, and give medical, nursing and hospital service direct to the beneficiaries of its policies. That, of course, is not necessarily or ordinarily a part of health insurance."

The courageous attitude of Dr. Olin West regarding the practice of medicine by insurance companies is expressed in one paragraph of his discussion. He said:

"Something has been said about insurance companies and how we ought to 'contact' the insurance companies. We are perfectly willing to 'contact' them; we have 'contacted' them. But in most instances the 'contacts' have ended, for the time being at least, when it has developed that the medical service to be delivered under their policies is to be altogether subject to the choice and direction of the companies. There are few exceptions to this rule. In so far as I am concerned, I am not willing, with the interest of the public in mind and with the interest of scientific medicine in mind, to turn over the practice of medicine to an insurance company or to any other corporation. I am not willing to turn it over to anybody except the medical profession, and unless the mandate comes from the organized medical profession, when it has been convinced that socialization is best, I will oppose any movement designed to socialize medicine and to subject the practice of medicine to political domination."

If the organized medical profession of the United States has the vision and the courage to face the insurance proposition squarely before too many of its members have contracted with insurance companies to provide medical care for their policy holders, it will be saved from vassalage to commercial institutions. If we sit down and wait for the "other fellow" to do something about it health insurance, which will pauperize a large proportion of the doctors in every community in the nation, will be-

come so established that it will not be possible to break its strangle hold on the public; and sooner or later the states, or the national government, will take over health insurance as Germany, Austria, Russia and England have done. "An ounce of prevention is worth a pound of cure" in dealing with sinister influences both inside and outside the medical profession.

Health insurance is highly desirable when it pays the policy holder a stipulated amount of money each week during illness or disability from accidents, thus allowing the individual to select his physician and his hospital; but the health insurance which intends for its beneficiaries to receive medical attention by company physicians, in subsidized hospitals, is a menace to the public, because it will provide inefficient medical service, and it endangers medical initiative and medical independence because by that plan doctors will become merely hired men of the insurance companies.

Every county medical society, every state medical association and the American Medical Association, during the year 1933, at the earliest possible meeting, should adopt ordinances, or by-laws to their constitutions, outlawing the practice of medicine by insurance companies. If prompt action is taken the insurance companies will abandon their plans to employ doctors to care for the sick among their policy holders.

There can be no objection to casualty or other insurance companies employing their own physicians to provide surgical attention to employees of corporations in case of accident, or other injuries, for which corporations are liable under the compensation acts of various states; and certainly insurance companies have the right to employ physicians to examine their policy holders in case of illness in order to prevent being imposed upon by the policy holder, but the employment of a physician, or a group of physicians, by insurance companies to practice medicine for them is most reprehensible and should not be permitted.

THE TEXAS PLAN FOR CONTROL OF CONTRACT PRACTICE

The contract practice problem has been disposed of very satisfactorily in Texas. A number of Dallas physicians had contracts for the medical care of the employees of

several corporations. Eighteen Dallas physicians were suspended from membership in the Dallas Medical Society for participating in those contracts. They appealed to the State Medical Association, which upheld the ban on contract practice by the Dallas Society. The physicians having contracts then appealed to the American Medical Association which sustained the action of the Dallas County Medical Society and the Texas State Medical Association; whereupon the eighteen physicians gave up their contracts, and corporation practice except for emergency surgery and in lumber camps and mining camps has been eliminated from Texas.

The following amendment to the by-laws of the Dallas County Medical Society, was upheld by the Texas State Medical Association and by the Judicial Council of the American Medical Association:

"No member or combination of members shall either directly or indirectly enter into contracts or agreements to render professional service under the system known as Contract Practice except in situations wherein the needed medical and surgical services cannot otherwise be obtained. (As, for instance, railroad surgeons, physicians for mining camps, lumber camps, instances to meet necessities of patients to be served.)

"Any member or members entering into contract with individuals, corporations or other concerns to provide medical and surgical services for groups of individuals, or individual groups, to cover a period of time, for stipulated remuneration shall be in violation of this regulation and subject to the penalty otherwise provided for unethical conduct."

KEEPING THE RECORD STRAIGHT

It is with some degree of satisfaction that the plan which I suggested to solve the contract practice problem in Alabama is practically the same as the policy that has been adopted by the Texas State Medical Association and approved by the Judicial Council of the American Medical Association, i. e., to limit industrial contract practice to the care of accident cases among the employees of a corporation, except in isolated communities, in which there can be no unfair competition.

Just to keep the record straight, the following are the "Seale Harris Resolutions" (Transactions, M. A. S. A. 1926, page 115):

"Resolved, That the Jefferson County Medical Society goes on record as disapproving all forms of contract practice except

(A) In communities of less than two thousand inhabitants in which a coal mine, lumber mill or other industry is located.

(B) With corporations paying a surgeon a salary, or fixed fees, for treating accident cases that come under the compensation law."

This plan was less drastic than the Wyman resolutions (Transactions, M. A. S. A. 1926, page 116), and much less radical than the Jefferson-Cullman plan (Transactions, M. A. S. A. 1926, page 118), which eliminated all forms of contract practice in all localities in Alabama except for emergency surgery. When the Jefferson County Medical Society by a majority vote adopted the Jefferson-Cullman resolutions, I supported that plan.

The above facts are mentioned to show that contract practice is a nation-wide problem and that it was not a personal issue in Alabama as some were led to believe. This communication is not written to "break a lance on the shield" of anyone; but it is intended only to call the attention of the medical profession of Alabama to a situation that should receive the careful consideration of every thoughtful physician. It certainly is not intended to offend those who are engaged in, or who believe in contract practice. Some of the very best men in the medical profession of the Birmingham District are engaged in contract practice, and some of them are my devoted friends even though we disagree in our opinions on industrial medicine. I still hope that the men doing contract practice in Birmingham, Ensley, Fairfield, Bessemer, Gadsden, and other Alabama cities, may see its effect on the medical profession as a whole and that they voluntarily will make their contracts conform to the rulings of the Judicial Council of the American Medical Association.

I certainly have no desire to stir up another fight on contract practice in Alabama. I may add that I did not initiate the fight on contract practice in 1925 and 1926, but when I was elected president of the Jefferson County Medical Society on that issue, I was placed in a position of leadership in which it was my duty to make the effort to carry out the will of the majority of the Society when the contract ordinance was up for consideration by the State Medical Association. I believed then, and believe now,

that those engaged in contract practice could change from the per capita monthly plan to fees for each individual case without its affecting their incomes, except in a few cases; and at the same time give as good, or better, medical service to the employees of corporations than they have heretofore received.

The plan recommended by the Committee on the Costs of Medical Care is essentially contract practice combined with a modified form of state medicine, because it calls for the collection of a monthly or annual stipend for medical services, "with when necessary, some supplementary support from

tax funds." Such a plan would inevitably lead to state medicine as it did in Germany, Austria, Russian and England.

Most of the physicians with whom I have discussed the subject, while they disapprove of the majority plan, say that "the insurance companies, or the state, or both will take over the practice of medicine and there is nothing that we can do about it." Fortunately those in authority in the American Medical Association do not take that attitude, and individualism in medicine will not be sacrificed on the altars of the ignorance of socialism or the greed of industrialism and insurance commercialism.

DEPARTMENT OF PUBLIC HEALTH

BUREAU OF ADMINISTRATION

J. N. Baker, M. D.,
State Health Officer in Charge

The following article by F. F. Schlink and Arthur Kallet, is clipped from the January issue of *The Readers Digest* and condensed from the December 21, 1932 issue of *The Nation*. It sets forth so graphically the many evils and diverse ramifications of the "patent medicine" traffic that it should make interesting and instructive reading for every doctor in the State. The doctor should have the facts and should be unremitting in his efforts to enlighten his patients and the general public on all matters of health.

POISON FOR PROFIT

Americans spend \$350,000,000 annually on patent medicines—enough for three or four bottles of some deadly, or useless, mess for every man, woman, and child in the United States.

At its best, the patent-medicine industry is guilty only of the economic fraud of selling necessary drugs under meaningless or fantastic names, with absurd claims of special merit, at from five to a thousand times their ordinary price. At its worst, the industry is guilty of murder—through selling medicines containing poisons and through persuading the poor and ignorant to rely upon worthless nostrums for the treatment of diseases as dangerous as cancer and tuberculosis and syphilis.

What are the penalties for such murder? *No penalties whatever, even when the killing can be proved.* Under the federal Food and Drugs Act, the courts, if they function at all, occasionally impose a small fine if a dangerous nostrum is *mislabelled*; they can do nothing, even though the nostrum kills, if it has no technically false statements on its label.

For example, there was Kopp's Baby's Friend. Between January 1906, and February 1907, the *Journal of the American Medical Association* reported the deaths of nine infants from dosage with this "King of Baby Soothers." Analysis showed that it contained a dangerous opiate, morphine sulphate. A shipment of Kopp's Baby's Friend and other Kopp remedies was seized by government inspectors in 1915, a decade later. The government charged that Kopp's Baby's Friend was misbranded, and the company was fined \$25 and costs. After this farce, the company was permitted not only to remain in the medicine business but to continue to sell the same deadly poison, provided that it made no false claims on the label—it could still claim anything it thought credible in its advertising—and declared the presence of the opiate, morphine sulphate.

Apologists for advertising constantly refer to the old "patent-medicine days," and imply that dangerous "cures" belong to the past; that the federal Food and Drugs Act came along like a strong, fresh wind and swept them all away. We forget that the act applies only to claims printed on labels or packages and is completely impotent to prevent the making of viciously misleading claims in newspaper, magazine, radio, or mail advertising. Even if labels were universally accurate, the advertising, by its volume, its frequency, its cleverly worded assurances and testimonials, and the good repute of the medium in which it appears, sells the nostrum.

How urgent the need is for a thorough overhauling of the whole badly designed and tottering structure for the protection of the public against unsafe medicines and drugs can be judged from the death this year of the wealthy E. M. Byers as a result of taking Radithor, a patent medicine containing radium, a deadly poison when used indiscriminately. Food and Drug Administration officials were apathetic in their reaction to the whole matter. If there had been no radium in Radithor, they said, they could have prosecuted for

misbranding, but since it was correctly labeled, they could do nothing.

A flood of radium preparations and devices—waters, belts, pads, salves, hair tonics, tissue creams, mouth washes, even chocolate bars—are being sold for their marvelous curative powers. Most of them contain no radium in any form and so are probably harmless. But others, like Radithor, actually contain radium, which can cause cancer and other diseases, even when it does not enter the body.

Hundreds of thousands, and perhaps millions, of persons are still being unwittingly dosed with a hundred or a thousand other dangerous poisons; and there is no law, except feeble and ineffective state and municipal regulations, almost never enforced, by which the poisoners can be reached. Perhaps to safeguard private morals as well as health, the presence of alcohol, narcotics, and a few other drugs must be declared on proprietary medicine labels under the provisions of the federal Food and Drugs Act. But patent medicines may—and do—contain arsenic, strychnine, or any one of countless other poisons without any notice of their presence being given to purchasers. If so-called patent medicines were actually patented, their formulae would at least be available at the Patent Office to anyone paying the five-cent fee for the printed patent paper. With rare exceptions, however, they are not patented, and their contents are secrets which are wisely kept from purchasers, and which, in the United States, the makers are under obligation to reveal to no one, even to government officers.

A typical case reported by the Bureau of Investigation of the American Medical Association is that of Matthew Richartz and Eksip, his cure for diabetes. Eksip consisted essentially of magnesium carbonate, ordinary talc and starch, a worthless mixture which would have been harmless had not Richartz advertised that Eksip made dieting unnecessary—that diabetics taking Eksip could eat anything. There can be little doubt that this dangerous advice sent many diabetics to an untimely death, for over \$90,000 worth of the nostrum was sold in 1928.

Richartz, born in Germany, received only four or five years' schooling, and was a barber. Eksip was created in 1921 from the formula of "Dr. Stein-Callenfels . . . noted European specialist who, after a life-long study, amazed other European specialists with his famous discovery." As a matter of fact, Dr. Stein-Callenfels never existed.

Like practically all quacks, Richartz used testimonials extensively. In 1929 he was using this testimonial of J. C. Meyers of Charleston, South Carolina: "I am a living advertisement for Eksip . . . for if it had not been for Eksip and God's blessing, I would have been in my grave today." But alas, in 1929 J. C. Meyers *was* in his grave. He had died five years before of diabetes, the disease which Eksip "cured." Richartz produced one living testimonial at the postal hearings, Lewis L. Smith, a diabetic who testified that such were the benefits of Eksip that he "didn't bother about diet any more." Three days after he testified,

Smith died—likewise of diabetes. Most deplorable, and at the root of the whole ridiculous proceedings of federal law enforcement, is the fact that a man with Richartz's background should ever have been permitted to engage in such a business.

It costs money to be sick, to go to doctors, specialists and hospitals; it costs more money than most people have or can spare. A poor woman worrying herself to death, fearing that the small lump she has discovered on her breast is cancer, knows that if she goes to the doctor it will mean visits to high-priced specialists. How easy it is at such a time for her to believe the advertisement of a positive cancer cure—only 75 cents a bottle, and it can be used at home, one teaspoonful morning and evening in a half-glass of water. Or it may be tuberculosis, or diabetes, or perhaps a venereal disease of which the victim is ashamed and which he would like to cure secretly. To buy the magic bottle is so easy, and, at first, so cheap!

BUREAU OF LABORATORIES

L. C. Havens, M. D., Director

BACILLARY DYSENTERY

The clinical condition known as dysentery, colitis, or infectious diarrhea is probably the chief cause of sickness and death in babies and young children. While the trend in Alabama is downward, due to more intelligent feeding, improvement of milk and general elevation of the sanitary environment, many babies are still needlessly sacrificed. That our knowledge of the disease is inadequate is indicated by the variety of names used for the same clinical entity. In fact, there is evidence that intestinal disorders, manifested by diarrhea, with mucous, bloody stools, may be caused by other bacteria than those of the known dysentery group. There are those, even, who hold that it is not infectious, the etiology being ascribed to indiscretions of diet or improper feeding. It will be readily understood, therefore, that more knowledge is needed, epidemiologic and bacteriologic, as well as clinical, if the disease is to be controlled.

There are, however, investigations which, while few in number, have been well-planned and painstakingly carried out, and these all indicate that the important, if not the sole cause, of infantile diarrhea and colitis, is the dysentery bacillus. There are, of course, several varieties of this organism which can be differentiated by bacteriologic methods into several subgroups. The Shiga

bacillus, first discovered and the most pathogenic member, is rare in this country, the chief varieties found being the Flexner, Hiss-Russell or "Y", Strong, and Sonne, so named after the investigators who first described them. They can be differentiated by their fermentation of various carbohydrates and by serologic means.

The first bacteriologic study of dysentery and diarrhea in Alabama was that of Davidson¹ in Birmingham in 1929. He found that dysentery bacilli, chiefly of the Flexner variety, could be isolated from the majority of cases. Dr. George A. Denison of the Jefferson County Health Department has made similar observations in investigations which are now in progress. Definite evidence, therefore, exists that dysentery bacilli are associated with colitis, while no other bacteria have been incriminated. When one recalls the difficulty with which the dysentery bacillus is isolated, even under ideal conditions, it is not surprising that some of the cases yielded negative results.

A recent investigation of the problem in Virginia by McGinnes, McLean and Spindle², has been productive of important results. Of 235 cases from whom specimens for bacteriologic study were obtained, 128 or 55% were positive for dysentery bacilli. That the disease is readily communicable was shown by the number of secondary cases, 90 of the total of 235 falling in this category. The sanitary environment showed a definite correlation with the number of secondary cases. Where sanitation was good, i. e., there were adequate sewage disposal facilities and observance of prophylactic measures, the secondary attack rate among persons exposed was 8.6%, while the rate among persons exposed in a poor sanitary environment was 22.0%, 2.5 times as high.

Carriers among family contacts were surprisingly numerous, 15% among contacts with bacteriologically positive cases, and 8% among contacts with cases from whom dysentery bacilli were not isolated. Secondary cases were most frequent in the age group 0 - 4 (33.3%), declining to 14%

among exposed adults. When the secondary cases and the known healthy carriers are added together, it appears that more than half of the exposed children under 9 harbored dysentery bacilli, while at least one-third of the older children and adults became infected.

Such a state of affairs, indicating strongly the infectious nature of bacillary dysentery and its universal distribution, readily accounts for the fact that few children escape the disease under ordinary rural sanitary conditions. That exposure to the infection is frequent and widespread is indicated by observations made in this laboratory, where it was found³ that about 40% of the normal population have agglutinins in their blood for one or more of the specific dysentery types. It seems obvious, therefore, that strict prophylaxis for each individual case and radical improvement in the general sanitary environment are necessary if any progress is to be made in the control and prevention of such a widespread infection, particularly in the absence of any means for mass immunization by the use of vaccines.

The dysentery bacilli found in the Virginia investigation included all the known types except Shiga. Of the 368 strains isolated, 68 belonged to the Flexner group, 116 Hiss-Russell, 60 Strong, 109 were Sonne and 22 were atypical or unclassified. It is interesting to note the large number of Sonne strains; until very recently this organism was unrecognized in this country and this, perhaps, explains the large number of negative results formerly obtained, due to lack of appreciation of its significance.

Bacillary dysentery has a sharp seasonal incidence. The curve begins to rise in March, reaches a sharp peak in June and then begins to fall, reaching the low points in the fall and winter. We are, therefore, at the beginning of this year's upward trend. Bacteriologic examinations are fully as essential in colitis and dysentery as in other enteric infections. It is only by accurate laboratory diagnosis that the importance of prophylactic measures can be realized in time to prevent the secondary infections which, apparently, are so common.

1. Am. J. Dis. Child. 22, 284, 1921; Medicine, 1, 389, 1922.

2. Read before the American Public Health Assn., Washington, Oct. 1932.

3. Havens, L. C. and Mayfield, C. R.: J. Prev. Med. 5, 295, 1931.

The State Laboratories are prepared to examine such specimens which should be shipped in the container furnished for feces cultures. Active cooperation from the medical profession in obtaining accurate diagnoses will at least furnish data whereby our problem in Alabama may be evaluated, the necessary first step in an intelligent attack on all preventable diseases.

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

TUBERCULOSIS TREND

That tuberculosis is no longer a leading cause of death and that it is rapidly decreasing is the unfortunate impression held by many of the general public. Experience in Alabama, however, does not support this rosy viewpoint. For the five years 1927-31 there was practically no change in the death rate from this disease and the long steady decline seemed to have reached an end. Provisional figures for 1932 would indicate a slightly lower rate than for 1931 and are more hopeful.

Just what effect the prolonged depression will have can only be settled by time. We know, however, that tuberculosis is particularly prevalent in that part of the population where food supplies are inadequate and where general living conditions are poor. The number of people who are living today under adverse conditions is greater than at any time in recent years and an increase in tuberculosis during the next few years would not be surprising.

Hence the fight against this disease must go on and even more vigorously than formerly. The two travelling clinics operated by the State are carrying on their task of case finding and are locating a great many previously undiagnosed cases. During the two years they have been in operation these clinics have made a positive diagnosis in over two thousand cases and in seventy-five per cent of these no previous diagnosis had been made.

The location of cases is the first step but having been found something must be done for them. Today it is especially difficult to adequately treat these cases as in many instances nourishment must be provided. By

enlisting all available agencies, however, each individual case can be handled, if not ideally, at least something can be done. Hospitalization, of necessity, is limited to a very few so that the vast majority of cases must be cared for at home and under the best arrangements that can be made.

BUREAU OF SANITATION

G. H. Hazlehurst, Director

STREAM POLLUTION STUDIES ESSENTIAL FOR SOUND PUBLIC HEALTH PLANNING

The public health of a community, city, county or state depends upon many factors. Uppermost of these is a safe water supply. To have healthy communities, the contamination of public water supplies must be prevented. Public health planning, however, must take into consideration not only such things as safe water supplies, necessary for healthy bodies, but also, things which are necessary to further the comfort and welfare of the public as a whole. The production of odor nuisances; destruction of fish and other natural stream life; interference with recreation, damage to property and depreciation of values; and the damage to commerce and riparian rights must also be considered.

The harmful effects mentioned above, which may result from polluted streams, indicate that stream pollution studies are essential for sound public health planning.

In Alabama approximately 577,000 people, or 21.8% of the State's total population, are served by surface water supplies—small streams, rivers and lakes. The number of towns and cities, which are turning to surface water for adequate supplies is increasing every year. At the present time there are eight or ten plants using shallow well or spring supplies which have experienced water shortages during peak demands. The majority of these will, no doubt, eventually turn to surface water for their sources.

The matter of stream pollution in this State, as in others, is becoming more acute each year. The inadequacy of underground supplies; increase in urban population; increase in the number and usage of municipal sewer systems; and the increase in in-

dustries which produce objectionable trade wastes account for this fact.

Alabama has a relatively large supply of surface waters which provide a goodly measure of natural purification, by dilution, for any intentional or chance pollution flowing therein. For this reason the stream pollution problem has gone unnoticed by the general public in most parts. In other words, taking the State as a whole, the problem is yet quite under control. The population should not be content, however, with the present treatment and disposal of wastes in this State without a fuller knowledge of the stream pollution resulting therefrom. Although few of her streams are in bad condition, Alabama must be active in trying to keep them from being any worse, bettering them, if possible, and in keeping the remaining ones as clean as is reasonable.

A systematic study of stream pollution is needed. It would provide knowledge for aid in (1) the selection and design of the most satisfactory and economical methods of water purification and sewage treatment and disposal; (2) the protection of streams for bathing, fishing, picnicing and other recreational purposes; and (3) the prevention of damage to riparian rights.

Pollution of streams should not be permitted to go uncontrolled, merely because of the costly and uncertain ways now available to a riparian owner to prevent it. This is the case in a number of states. There is a need for the establishment of more just and correct principles of legislation in regard to stream pollution studies.

T. H. M.

BUREAU OF CHILD HYGIENE AND PUBLIC HEALTH NURSING

Jessie L. Marriner, Director

THE COUNTY NURSE ASSISTS IN PRENATAL CARE

As an introduction to the following discussion, a review of the accompanying figures is suggestive. To get the figures for a full year, 1931 is taken. Number of live births—62,740; number of stillbirths—3,071; number of maternal deaths—504; to these must be added (were it possible) the number of pregnancies that terminated be-

fore the fifth month. What is the significance of these figures and what can the county nurse do?

It is important that prenatal care begin in the early months of pregnancy. The importance of this early care is too frequently not recognized by either the patient or her family. Notifying the family physician of an early need for his services is often his first knowledge of the case. Frequently, he is called only when needed. To break down this custom of long standing means the education of the people. The physician himself is the best teacher.

The county nurse is glad to cooperate in this educational program. Many physicians are already availing themselves of this service for their patients. Many, too, are getting earlier calls because the nurse emphasizes, first, "Get in touch with your doctor".

The number of home visits that a nurse can make on one case is limited by the time at which it is reported and by the demands of a generalized program.

At least two visits are desirable and special effort is made to give additional service at a doctor's request.

In addition to the necessity of early medical care, the nurse discusses, with the doctor's approval, the advisability of dental care. The old saying, "a tooth for a child", is not necessarily true, but unfortunately many mothers accept it unchallenged as their portion.

The diet in pregnancy, unless otherwise indicated, should be light, varied and nourishing. It should include milk, fruit and vegetables, both raw and cooked. Fortunately, with forethought and planning, these essentials can be had in every home.

Exercise is essential for health; so, also, is an adequate amount of rest. An effort should be made to arrange the work of the day so that this rest may be secured.

Doctors have expressed gratification, when called to a home, to find evidence of the nurse's teaching. A well-prepared hospital or home sterilized package of supplies ready for use makes his task not only easier but safer. For the nurse, the preparation with the mother of these necessary supplies establishes a relationship that can hardly be established in any other way.

The selection of a name for the new baby is often postponed for weeks or perhaps months after birth. His birth certificate has been filed. Then follows the difficulty of getting additions or corrections satisfactorily recorded. It is easier for the doctor and more satisfactory to the parent if a name is already selected and the birth certificate is complete.

Briefly, the prenatal program of the public health nurse is to teach the mother (1) the importance of early and continuous medical care (2) the hygiene of pregnancy (3) preparation for a more safe home delivery and (4) importance of the complete birth certificate.

F. C. M.

BUREAU OF VITAL STATISTICS

W. T. Fales, Director

PROVISIONAL VITAL STATISTICS

Alabama, 1932

	—Number—		Rate per			
	Decem- ber 1932	12 Months 1932	December 1932	12 Months 1931	December 1932	12 Months 1931
BIRTHS						
Entire State	5785	61400	25.2	26.2	22.6	23.3
White	3790	38475	25.7	27.2	22.1	22.8
Colored	1995	22925	24.3	24.3	23.7	24.2
DEATHS						
Entire State	3059	27123	13.3	10.1	10.0	10.4
White	1713	14528	11.6	8.1	8.3	8.6
Colored	1347	12595	16.4	13.6	13.0	13.7
INFANT MORTALITY						
	Rate per 1,000 live births					
Entire State	403	3720	69.6	55.8	60.6	63.3
White	210	2073	55.4	41.5	53.9	55.5
Colored	193	1747	96.7	84.8	76.2	76.4

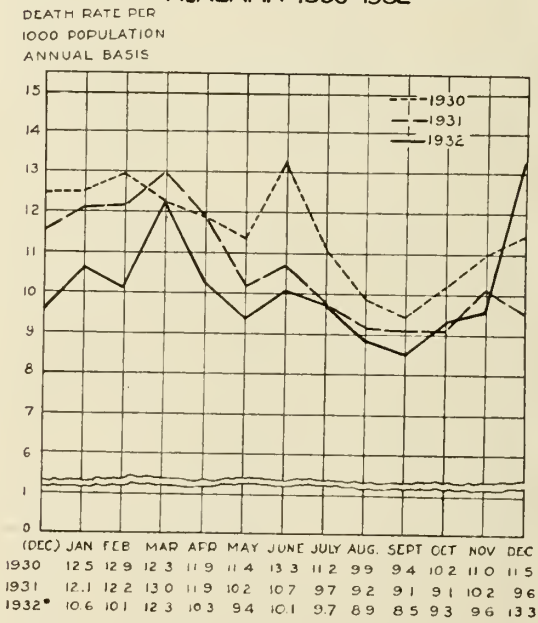
Preliminary figures would indicate that the birth and death rate for 1932 will be slightly below that for the preceding year, namely, 22.6 and 10.0, per 1,000 population, respectively. With the receipt of delayed certificates these rates will be slightly increased, but there is no doubt that Alabama, as the rest of the country, will show 1932 as being the most healthful year in its history.

The monthly mortality for 1932 was extremely favorable throughout the year, with the exception of December. As shown in the accompanying graph, the mortality for the first two months, particularly, was favorable, and only in October and December did the mortality of any month exceed that of the preceding year. In the early

months of the year, the low mortality can be contributed largely to the absence of any wide spread epidemic of influenza and pneumonia, and the mortality during the summer months showed new minima for typhoid fever and the diarrheas of children.

Provisional figures for the infant mortality, which, at the present writing, show 60.6 for the entire State, 53.9 for the white population, and 76.2 for the colored, are the lowest ever recorded in the State.

MONTHLY
DEATH RATE FROM ALL CAUSES
ALABAMA 1930-1932



*MONTHLY RATES FOR 1932 HAVE BEEN REVISED BUT MUST STILL BE CONSIDERED PROVISIONAL

Unfortunately the death rate for December was unusually high. The epidemic of influenza, which started in November, reached its maximum about the second week of December, and there were registered 509 deaths from this alone for the month, giving us a rate of 221.6, against 28.4 for December 1931, and 41.6 per 100,000 for 1930.

Provisional figures for the death rate by causes will not be available for another month, but the figures so far indicate that we shall have new minima for typhoid, malaria, tuberculosis, and diarrhea and enteritis. The most striking reduction for 1932 has been in typhoid fever, the death rate of which, as indicated now, will be only 4.8 against a previous low in 1931 of 6.9.

CURRENT STATISTICS
State Department of Health
*PREVALENCE OF COMMUNICABLE
DISEASES IN ALABAMA

	Dec. 1932	Jan. 1933	Estimated Expectancy January
Typhoid	15	12	43
Typhus	14	10	3
Malaria	66	34	55
Smallpox	6	4	67
Measles	7	11	276
Scarlet fever	164	89	125
Whooping cough	142	131	122
Diphtheria	160	86	163
Influenza	25656	4657	691
Mumps	143	138	127
Poliomyelitis	2	5	1
Encephalitis	4	2	2
Chickenpox	143	97	324
Tetanus	2	3	4
Tuberculosis	243	244	230
Pellagra	12	17	16
Meningitis	6	10	7
Pneumonia	637	326	605
Syphilis (private cases)	90	99	132
Chancroid (private cases)	3	3	13
Gonorrhea (private cases)	81	95	189
Ophthalmia neonatorum	1	1	3
Trachoma	0	0	0
Tularemia	0	1	2
Undulant fever	0	0	0
Dengue	0	0	1
Rabies	0	0	0

*As reported by physicians and including deaths not reported as cases.
The Estimated Expectancy represents the median incidence of the past nine years.

Book Abstracts and Reviews

The Colon, Rectum and Anus: By Fred W. Rankin, B. A., M. A., M. D., F. A. C. S., Division of Surgery, The Mayo Clinic, Associate Professor of Surgery, The Mayo Foundation; J. Arnold Barger, B. S., M. D., M. S. in Medicine, F. A. C. P., Division of Medicine, The Mayo Clinic, Assistant Professor of Medicine, The Mayo Foundation; and Louis A. Buie, B. A., M. D., F. A. C. S., Section on Proctology, The Mayo Clinic, Associate Professor of Proctology, The Mayo Foundation. 846 pages with 435 illustrations. Philadelphia and London: W. B. Saunders Company, 1932. Cloth, \$9.50 net.

Here is another volume which will reflect credit on the Mayo Clinic. The authors have described at length the progress and development of the diagnosis and surgical treatment of disease of the large bowel and rectum, incorporating the clinical experience and statistical data of the Mayo Clinic. They have succeeded in making a book so inclusive as to be almost encyclopedic, yet so well written as to seem almost too brief. The only criticism which can be offered is that medical treatment has, perhaps, not been stressed enough.

The brief chapter on the physiology of the large intestine brings out many points of vital importance to the clinician and is well worth careful reading. The chapter on chronic ulcerative colitis should be of special interest in view of the fact that much work has been done at the Mayo Clinic on the bacteriology of the stool in this disease and on the treatment of this condition by a concentrated immune serum. A large amount of space has been devoted to malignancy of the large intestine since malignancy in this portion of the body is so frequently encountered. The chapters dealing with diseases of the anal region should be of interest to every practitioner of medicine. In the chapter on the Methods of Diagnosis of Anal and Rectal Diseases, the authors bring out the point that the symptoms of diseases in this region offer little help in making a diagnosis and they stress the necessity of thorough examination. In the presence of a bloody discharge from the rectum they state that the examiner should assume that cancer is present until he has proved otherwise. The chapter on operative procedures is particularly well done and well illustrated.

The printing and binding has been done in the excellent manner characteristic of all of Saunders' books.
C. K. W.

Infants and Children—Their Feeding and Growth: By Frederick H. Bartlett, M. D., 424 pages. New York City: Farrar and Rinehart, Inc., 1933. \$1.50.

Dr. Bartlett offers a manual covering the common problems of Infancy and Childhood. He has given in minute detail the technic of infant feeding. This work is especially valuable since it stresses the importance of early feeding, against late feeding as generally suggested in previous books of this nature.

The prevention and cure of the common habits of childhood are incorporated in this work.

This book should be of great value not only to mothers, by whom it can be easily read and understood, but also to nurses, teachers, physicians and psychologists who deal with children.

R. P.

PROVISIONAL MORTALITY STATISTICS
Alabama, December 1932

CAUSE	Number of Deaths Registered December 1932			Annual Rate per 100,000 Population		
	White	Colored	Total	Dec. 1932	Dec. 1931	Dec. 1930
ALL CAUSES	1712	1347	3059	1331.8	1009.5	1261.6
Typhoid fever	2	5	7	3.0	5.2	8.4
Smallpox						
Measles					0.9	4.0
Scarlet fever	2	2	4	0.9	0.9	1.3
Whooping cough	13	6	19	8.3	1.7	4.0
Diphtheria	27	3	30	13.1	14.4	16.8
Influenza	298	211	509	221.6	28.4	41.6
Pneumonia, all forms	134	105	239	104.0	83.2	104.0
Poliomyelitis	1	1	2	0.4	0.9	0.9
Tetanus	2	1	3	1.3		1.3
Tuberculosis, all forms	76	93	169	73.6	81.0	100.0
Tuberculosis, pulmonary	73	86	159	69.2	72.7	92.1
Malaria	9	5	14	6.1	5.7	10.2
Cancer, all forms	114	30	144	62.7	47.7	62.0
Diabetes mellitus	28	10	38	16.5	11.8	9.3
Pellagra	8	18	26	11.3	8.7	20.8
Cerebral hemorrhage, apoplexy	111	45	156	67.9	59.1	75.7
Diseases of heart	187	136	323	140.6	122.5	130.6
Diarrhea and enteritis						
Under 2 years	11	9	20	8.7	10.5	12.4
2 years and over	7	4	11	4.8	5.2	8.4
Nephritis	122	83	205	89.2	81.8	104.0
Puerperal state, total	24	15	39	17.0	13.6	22.6
Puerperal septicemia	6	7	13	5.7	2.6	6.2
Congenital malformations	13	5	18	7.8	7.4	4.9
Congenital debility and other diseases of early infancy	77	48	125	54.4	48.6	67.7
Senility	25	44	69	30.0	16.6	23.5
Suicides	17	1	18	7.8	4.4	11.9
Homicides	15	38	53	23.1	18.4	23.9
Accidental burns	8	7	15	6.5	5.7	18.6
Accidental drownings	3	4	7	3.0	0.4	1.3
Accidental traumatism						
by firearms	8	6	14	6.1	8.8	9.3
Mine accidents	4	1	5	2.2	2.6	3.5
Railroad accidents	4	10	14	6.1	4.8	3.5
Automobile accidents	25	6	31	13.5	18.8	23.5
Other external causes	39	18	57	24.8	19.7	24.3
Other specified causes	199	136	335	145.8	153.6	174.0
Ill-defined and unknown causes	100	243	343	149.3	116.0	133.2

Truth About Medicines

Vague Mineral Claims.—Vague or non-specific “mineral” claims or statements in food advertising may, either directly or indirectly, signify or imply the presence of all the nutritionally valuable mineral elements in physiologically significant quantities in the advertised foods. “Mineral” claims should name those elements only which are contributed in substantial physiologic amounts by the respective foods in the quantities ordinarily consumed in the diet. (Jour. A. M. A., November 12, 1932, p. 1691.)

Irradiated Milk.—Enough evidence is available, from the clinical as well as the experimental field, to give assurance that rickets can be averted. To give some idea of the number of antirachitic agents at present offered, mention may be made of cod liver oil and cod liver oil concentrates, viosterol (irradiated ergosterol) irradiated products of the utmost diversity, foods fortified with viosterol, and direct ultraviolet irradiation. Obviously, it ought to be of advantage if antirachitic properties could be imparted, without attending deterioration, in a suitable degree to a few foods that enjoy widespread use, particularly in the dietary of childhood. Probably the two most universally consumed foods are bread and milk. That is why interest has begun to be centered in these products as means of antirachitic prophylaxis. Milk is of particular interest because of its unrivaled content of calcium and phosphorous—the adjuvants of a properly planned antirachitic regimen. It is gratifying to learn through a recent communication of A. F. Hess and his co-worker that fluid milk can now be successfully activated at almost insignificant cost, that it retains its antirachitic potency after drying, and that both the fluid and the dried products have been extensively tested on children with satisfactory outcome. (Jour. A. M. A., November 26, 1932, p. 1864.)

Diet-O-Meter.—The Diet-O-Meter is a balance (not spring scale) designed for weighing food and calibrated in grams and ounces. For ease of carrying, this scale is enclosed in a nickel-plated metal case $4\frac{3}{4}$

inches by $4\frac{1}{2}$ inches in length and breadth, and seven-eighths inch in thickness. Technical Equipment Corporation, 120 Broadway, New York. (Jour. A. M. A., November 5, 1932, p. 1604.)

So-Called Special “Diabetic Foods” or Special Foods for Sugar and Carbohydrate Restricted Diets.—There is authoritative evidence that commercially prepared special “diabetic foods” are of limited usefulness to the diabetic patient and that the availability of insulin makes them no longer necessary. The designation of a food as a “diabetic food” merely because it is low in carbohydrates is now unwarranted and misleading and gives the erroneous impression either that the food taken in unrestricted quantities in diabetes is harmless or that it has remedial action. Lay advertising for these special foods shall not include disease names such as diabetes nor directly or indirectly indicate that the foods are curative or increase the ability of the body to utilize sugar, or give the impression of harmlessness when eaten in unrestricted amounts by diabetic patients. Advertising of a medicinal or therapeutic character shall be limited to medical periodicals or material for physicians exclusively. The package label shall conform to the preceding requirements. (Jour. A. M. A., February 11, 1933, p. 411.)

A CODE FOR PROFESSIONAL MEN

The Toledo Academy of Medicine *Bulletin* for November carried the following paragraph, attributed to the Honorable Charles E. Dawes: “If you work in a profession, in heaven’s name work for it. If you live by a profession, live for it. Help advance your coworker. Respect the great power that protects you, that surrounds you with the advantages of organization, and that makes it possible for you to achieve results. Speak well for it. Stand for it. Stand for its professional supremacy. If you must obstruct or decry those who strive to help, why—quit the profession. But as long as you are a part of the profession, do not belittle it. If you do, you are loosening the tendrils that hold you to it, and with the first high wind that comes along, you will be uprooted and blown away and probably you will never know why.”

THE JOURNAL

OF

The Medical Association of The State of Alabama

Published Under the Auspices of the Board of Censors

Vol. 2, No. 10

Montgomery, Alabama

April 1933

A CODE OF ACTION IN SOLVING MEDICAL ECONOMICS

By

James R. Garber, M. D.
Birmingham

From all quarters we gather information of the social unrest throughout the world, carrying with it dissatisfaction, criticism and an unstable psychology. From every section we glean the fact that we are scheduled to witness strange and unbelievable changes in every department of social contacts including governments, business and individuals alike. No one is bold enough to outline the character of these changes, but that changes are to be seems to be assured. So, it behooves the members of a liberal profession, as medicine, to acknowledge the existence of agitation directed at its fortresses and to determine upon a plan to counterbalance disturbing repercussions and thoughtless reprisals. That organized medicine will ultimately meet and adequately solve its sociological problems is unquestioned. No one individual nor a small group of physicians will be able to do so. Consequently, it is not in the scope of this discussion to formulate a chart for adjusting the problem of "The Cost of Medical Care" but to direct your attention to the basic, fundamental principles upon which the profession should predicate its studies and agree upon the final decision of the question. Being obsessed with the spirit of a genuine and unadulterated democracy that guided the thoughts and pens of the framers of the Constitution, the writer yields to the impelling impulse to plead for reason in settling our present day medical economic difficulties. To work contrariwise is to invite disaster. To permit rabid and unconstitutional minorities and majorities to dictate a solution is unwise, for, as Col. House has remarked, "when illegal means displace law and order, even tem-

porarily, there is no telling what the end will be." Strict adherence to fundamental principles, supported by unanimity of opinion within the medical profession, will insure peace and happiness and will reserve unto the profession the fabric of usefulness, freedom of action and an impregnable palladium of liberty.

The medical profession is a corporate body inasmuch as this term refers to the unison of many individuals into one body. Like the government in this respect, there is further similarity in that it has component parts. The basic regulations that establish the autonomy of government, the inalienable principles that create actual as well as implied restrictions in its functions, are not only manifest, but equally as mandatory, in the conduct of corporate activity. Then, it appears reasonable to apply the rules and practices of government to medical organization.

Of one fact we are all assured and it is "experience is the master teacher". And in another truism—what has been will happen again—we can salvage philosophy and comfort. Life is a cyclic evolution and the lesson of one cycle, properly evaluated and carefully analyzed, will be the monitor of our actions in succeeding evolutions. The mutations of time and of progress are inexorable and subsequent adjustments are inevitable. Problems of life become more complex in each generation. Customs and fashions are flexible to the trend of the era. Proprieties and rights are molded to the exigencies of the times. In short, the social order of the universe blends actions with requirements and prescribed curricula. In periods of war the populace is war-minded and war actuated. In periods of peace, it experiences a transformation and centers its thoughts upon domestic issues; in periods of prosperity it suffers a fulminating attack of extravagance and indifference; in periods of depression it under-

takes a complete reformation—mayhaps a riotous annihilation—of the existing order of things. In this last mentioned period, the unwholesome spirit of being “anti” everything, leads to agitation for changes with a total disregard of the sacred, fundamental and essential tenets governing man’s contact with man, regulating the intercourse of section with section. Indeed, under the strain and stress brought about by a disordered world, inevitably mass psychology causes a subordination of individual rights and prerogatives, the only God-given covenant to man for achieving salvation and a career in life.

The mooted question of the “cost of medical care” is a result of the whirlwind of depression. It has become a popular topic of debate for the informed and uninformed, for individuals and various social agencies, for the medical and non-medical press. Committees have investigated and reported. And yet, with it all, the leaders are in a circle. Plans have been suggested but without the tone of finality. In fact, one gathers that the rank and file of the profession must eventually write *finis* to the puzzle. Especially conscious of this fact and realizing all of us must enter into the argument, a code of action will be presented in the hope that any prejudice or bias will yield to elementary principles of government, that haste and immature decision will retreat from the council chamber upon invoking such principles.

When considering this controversial subject it is mete and just that an understanding of freedom and authority be thoroughly and lucidly established. In one instance, the inherent right of the individual is contemplated while in the other dispensation by society is interpretive. Freedom may be viewed as the incontestible privilege of the individual to have and to hold perquisites of the free agent. Avocation, religious and political affiliation, possession of property are examples germane in this premise. Authority is the right sanctioned by society, placing safeguards for the individual as well as for the body politic, establishing a universal control upon the actions of men. To be more definite: any man is free to study medicine. This connotes freedom of individual choice. But, society must grant authority to practice medicine and it must

enumerate the regulations governing the conduct of practice which action constitutes the authority or liberty for the exercise of freedom. And so it goes for every man and woman, whether in individual or collective endeavor. To escape the tyranny of oppression where freedom and liberty flowed only from the heart and hands of a monarch, the early settlers of this continent braved hardships and endured privations to establish the eternal and everlasting principles of freedom. Naturally, a form of government was desirable for peace and contentment among men and in devising an instrument to regulate the conduct of men and the masses, the framers of the Constitution ever kept in mind the complete emancipation of the individual’s right. Underwood points to the extent of abandonment of these original principles, by the federal government, as exemplified by the bureaucracy of the national government. National leaders have gradually usurped many privileges from the citizens and, as a consequence, those governed have imbibed a similar psychology. Hence, the demand by the layman upon our profession for regulatory statutes looking to lowered medical costs. Hence, the determination of the layman to establish a dictatorship for the doctor in the pursuit of a purely personal and private enterprise. Quoting from Underwood’s treatise, *The Drifting Sands of Party Politics*, “the believer in the philosophy of freedom and liberty (used synonymously with authority) will contend that the God of the universe did not create man to wear the shackles of restraint no matter from what source imposed, and will contend for the utmost freedom of action for the individual, consistent with the limitations of society.” Because doctors render a public service more as individuals than as a closed corporation permits of no invasion by a non-medical group upon personal reservations, nor does it grant a license to abridge a recognized and an avowed freedom. Should such an entering wedge be placed in this controversy, the members of our profession would live to understand this warning from President Madison in setting forth the purpose of government: “The essence of government is power; and power, lodged as it must be in human hands, will ever be liable to abuse.” In

pleading the case of freedom versus authority, individualism is sponsored. Man must control and master his rights as he thinks best and at the same time be submissive to the sane and liberal dictates of society from whence flows liberty; and take care not to trespass upon nor interfere with this identical possession of his neighbor. There is no disposition to escape the fact that all men must be governed but every ounce of energy is placed in the war against trespassing upon individual rights, a sinister movement looking to government control of medicine. In this connection, permit a reference to the words of that brilliant exponent of democratic government, John Sharp Williams: "Our forefathers knew the danger of excess of government and were bent upon so simplifying, limiting and checking it, that it must forever remain a servant and could never become a master." Jefferson contended it (government) was to make these natural rights more secure; that its chief business was to be a fence around them and a bulwark of protection for them.

Thus far, this discussion may be said to have evolved into a brief in behalf of the medical profession. Men of a liberal arts education as the doctor, freely acknowledge another side to the debate,—but, by the same token of educational equipment, it is our contention that the principles of this specific case must not be weakened by specious argument nor the truth suppressed in defense of a cause whether it be good or bad, real or fantastic.

The foregoing remarks have dealt with the significance of individual rights for the practitioners of medicine which, let us admit, are shared alike by the layman. If the layman insists upon sharing the terms as already set forth, in his solution of the cost of medical care, an abandonment of the original argument is invoked, because in crying for the enjoyment of individual's rights, the spirit and letter of paternalism—yes, a suspicion of socialism—pervade the subject matter. Throughout the years the medical profession has indulged society with a paternalistic attention, if caring for the indigent and quasi-indigent constitute such action. Today as yesteryear, the members of the most humane profession known to man continue the supervision and actual

accomplishment of said responsibility. Until recently, when the world became topsy turvey and the majority of people revolted against every agency directing the destinies of the nation, we were let alone. Now, we have been caught in the web of social unrest and the uninitiated, the inexperienced are clamoring to formulate a rule of thumb in medical economics for those who have been guardians of health while the world has pursued its relentless course unmindful of this tradition of the profession. The public harps upon the cost of medical care and asks for concessions that may be the forerunner of paternalism; and paternalism is inimical to its welfare. Ponder the words of Underwood on paternalism: "What paternalistic government proposes to do for the people, in the end the people pay for, with the greatly added price of burdens and commissions to those who engage in its administration. But the cost and burden of government is not the main equation involved in personal government; it is restricted freedom; it is often dishonest and usually Pharisaical interference with the individual in the home, the workshop, or the business office; in his religion, his reaction, yes, verily, in life itself."

If we permit paternalism, government direction of medicine will be the answer. By such a step we surrender individual's rights and proclaim aloud ineptitude in handling medical economics. We will place ourselves on record as being in the position best described in the words of Burlamaqui: "Sovereignty is a right of commanding in the last resort in civil society." Who best understands the medical needs of the public? Who gives to mankind the progress of medical science? Who balances the equation of health and sickness or fights the battle against the Grim Reaper? Who is familiar with the qualifications of doctors? Who in a private business protects society from its own abuses and indiscretions? The physician. Then, let the physicians conquer the secondary and collateral issue of medical cost for the major good they render. Again, the impression that some adjustment in the cost of medical care must be made is restated. Be it whatsoever it may, any change must come from the profession itself—not only the determination of the problem but the all important movement of

initiativeness. In viewing liberty as a personal advantage for the individual it may be argued that it can be abridged or suppressed "insofar as an advancing civilization surrenders certain personal rights for the common good." Such surrender on our part, however, must be a product of our making and volition and must conform to democratic principles that "are to speak in the same voice now and forever and are of no man's private interpretation"—to quote from Story in his writings on the Constitution.

The medical profession is equipped by temperament and experience to solve its problems. No other group can preserve its traditions nor understand its ethics and principles of practice near so well. Extraneous political influences must be vigorously resisted as it furnishes the nidus of sociological infection. In this connection a pertinent quotation from an editorial in the *Ladies' Home Journal* for February 1933 is appropriate: "We have politics messing its often dirty hands in business, in our schools, in most public affairs and some private ones as well. But may we be preserved from politics in personal health." Conserving health and life, as a commodity, is a responsibility of no mean proportion and any step taken to protect the practice of medicine from unsavory and unwholesome changes is warranted and obligatory. The present must not levy burdensome and unholy tribute from the future. In support of the theme of thought herein presented permit your attention to be directed to a few excerpts from the writings of several of the master writers upon Government.

John Stuart Mills in his "Essay on Liberty" said: "In political speculations 'the tyranny of the majority' is now generally included among the evils against which society requires to be on its guard. . . . But, as yet, there is a considerable amount of feeling ready to be called forth against any attempt of the law to control individuals in things in which they have not hitherto been accustomed to be controlled by it; and this with very little discrimination as to whether the matter is or is not, within the legitimate sphere of legal control."

In speaking of that simple principle entitled to govern absolutely the dealings of society with the individual he states "that

the sole end for which mankind are warranted individually or collectively in interfering with the liberty of action of any of their number is self protection. . . . In the part which merely concerns himself, his independence is, of right, absolute. Over himself, over his own body and mind, the individual is sovereign."

Chief Justice Marshall has said: "We admit, as all must admit, that the powers of government are limited and that its limits are not to be transcended."

Underwood says: "Where individual liberty, as thus defined is not respected by the body politic, the citizen is not free. . . . When the law is born of selfish desire, fanaticism or racial class or religious impulse, its failure is usually assured in advance. The horizon of benevolence and good fellowship should always be an expanding one, but the scourges coming from adverse opinions and desires should not be used to destroy the independent action of the person involved, whether the impulses to direct and control come from benevolent wishes or the selfish desires of those who try to shape the conduct of another.

"Let us consider only the direct problem before us and see if we can agree on four principles of government as those most necessary for the safe guidance of the ship of state, whose abandonment would put in jeopardy the rights of the individual. They are, first, 'the government that governs least, governs best'; second, that local self government is essential to good government; third, that the prime purpose of government should be to protect the rights and the liberties of the people; and last but not least in importance, that a free people should be governed by well defined laws and not by the fiat of the changing rules and regulations of men."

Crises come at times to all men and nations and the men come with them. If, in the purposes of destiny, a crisis is now impending, the men will come with it. Out of conflicting elements, out of grim, unfaltering firmness, out of the massive sinews of justice, out of an inspired purpose will be developed medical statesmen who will lead on to victory. So long as the temporal trinity of Brains, Brotherhood and Will remains, just so long will our problems be translated into beneficent benedictions for

mankind. Sterling purposes, virtuous ambitions will have their counterfeits, but that should not depress the general value of the issue. The shadows of night are rising and the dawn of a new day affecting our professional lives is tinting the skies with a light that should lead and not blind, a dawn that promises a sunshine that will melt away misunderstandings, infidelities, selfishness, injustices, intolerance and unreasonableness.

In adjusting the problems of the Cost of Medical Care I raise my voice in a paen of exultancy—

Give me freedom or let me perish in the
ideals of democracy.

GENERAL DISEASES CAUSING ABNORMAL UTERINE BLEEDING

JOHN E. WALKER, M. D.
Opelika, Alabama

It is well known that a careful pelvic examination should be done on every patient complaining of abnormal uterine bleeding. This examination must frequently be supplemented with the microscopic examination of tissue removed at biopsy. One should not, however, lose sight of the fact that general diseases are often responsible for menstrual disorders. The necessity of studying the patient as a whole instead of concentrating the attention solely in the pelvis has been previously emphasized in this Journal by Burch.¹ The very ease of producing an artificial menopause by radiation has led to its too frequent application, exactly as the operation of oophorectomy was abused in the early days of gynecologic surgery. Further, the recently introduced endocrine therapy (luteinizing hormone of the anterior pituitary) will be ineffective in bringing about any permanent improvement if underlying general diseases are undiagnosed and untreated. It is the purpose of this paper to consider 3 general diseases—thrombopenic purpura, hypothyroidism, and primary hypochromic anemia—which frequently give rise to abnormal uterine bleeding.

THROMBOPENIC PURPURA

When thrombopenic purpura (hemorrhagic purpura) causes uterine bleeding, there is usually bleeding from other mucous mem-

branes, such as the nose, gums, gastro-intestinal tract, or the genito-urinary system. Uterine hemorrhage, however, may occur alone, in which case there is no immediate clue as to the cause. Even these cases as a rule show subcutaneous hemorrhages—petechiae or ecchymoses. The skin should be carefully searched for such hemorrhages in every case of uterine bleeding without pelvic pathology.

The Rumpel-Leede test (or the tourniquet test) is a rapid clinical method for determining the presence or absence of the disease. A blood pressure cuff is applied about the arm at a pressure midway between the systolic and diastolic pressures for 5 minutes. The test is positive if within a few minutes after removal of the cuff a crop of purpura spots appears on the arm below the cuff. A profuse crop of spots and spots 1 cm. in diameter are almost pathognomonic of thrombopenic purpura (Clough²).

Final diagnosis rests upon examination of the blood. The characteristic findings are prolonged bleeding time, non-retraction of the clot, and diminished platelet count. The coagulation time (often erroneously performed as the sole test in hemorrhagic conditions) is normal or only slightly increased.

Many cases of thrombopenic purpura are mild and recover without any special treatment other than rest in bed. However, if the bleeding is profuse and the hemoglobin becomes dangerously low, blood transfusion should be resorted to. This often stops the hemorrhage, at least temporarily. When blood transfusion cannot be done immediately, 20 to 40 cc. of whole or citrated blood from a relative should be injected intramuscularly.

Splenectomy was introduced by Kaznelson³ in 1916 in the treatment of thrombopenic purpura, and is now generally considered specific therapy for the chronic type of the disease, though failures have been noted. The operative mortality, however, is too high for its general use in acute purpura. Spence⁴ found that 10 out of 12 cases of acute purpura operated on died. In recent years, considerable attention has been given to the possibility of replacing splenectomy with x-radiation of the spleen. Schaefer⁵ states that large doses of x-ray

over the spleen usually renders splenectomy unnecessary. Dannreuther,⁶ at the New York Post-Graduate Hospital, irradiates the spleen as a routine in all cases of uterine bleeding of undetermined origin. It is to be hoped that these encouraging results will ultimately permit the complete abandonment of splenectomy in these exsanguinated patients who are such poor operative risks. There is no question but that every patient should be given the benefit of x-radiation of the spleen before resort to splenectomy.

HYPOTHYROIDISM

Myxedema is ordinarily easy to diagnose if the physician thinks of it. Not all cases of hypothyroidism have the typical appearance of myxedema. Abnormal uterine bleeding, particularly of the menorrhagic type, is often the presenting complaint in hypothyroidism. For that reason, careful inquiry should be made in all patients with abnormal uterine bleeding in regard to lack of perspiration, undue sensitiveness to the cold, forgetfulness, and falling hair. The skin of these patients is often excessively dry and feels rough and thick. This inquiry should be supplemented by a basal metabolism determination whenever there is any suspicion of hypothyroidism.

Gardiner-Hill⁷ found that 78% of his patients who developed myxedema before the menopause suffered from menorrhagia. Among patients diagnosed as myxedema after the menopause, he records the significant finding that in 1 out of 4 the menopause had been brought on artificially—either by surgery or radiation—on account of menstrual flooding. This, of course, can only mean that a large proportion of these patients were subjected to artificial menopause uselessly. Their menstrual floodings in all probability resulted from hypothyroidism, undiagnosed at the time the artificial menopause was brought on.

The following report of a patient recently seen by me illustrates the effect of thyroid therapy in controlling the menorrhagia of hypothyroidism:

A married woman, aged 32, complained of aching pains in the hands, shoulders, and knees, and of profuse menses. On further questioning, she stated that she was very cold natured and perspired very little even in the hottest weather. She had

been mentally sluggish, and subject to spells of mental depression. Her complexion presented a yellowish waxy cast, and the subcutaneous tissues of the lower lids and shins were edematous. Her features were coarse and blunt. General physical, pelvic, and laboratory examinations were negative, except that the basal metabolism was minus 28%. On thyroid therapy, the waxy complexion and aching disappeared. The menses and basal metabolism became normal.

In the treatment of ambulant cases of hypothyroidism, I prefer to begin with a small dose, usually 1 grain of thyroid, U. S. P., a day. This daily dose is increased 1 grain a week until the basal metabolism becomes about minus 5%. Rarely more than 4 or 5 grains a day are required. After this, the dose is reduced to a proper maintenance dosage of 1½ to 2½ grains a day. The initial administration of 3 to 9 grains a day will control symptoms more rapidly but, unless the patient can be kept under very close supervision, may give rise to such disagreeable symptoms of thyroid overdosage that the patient becomes alarmed and discontinues treatment.

PRIMARY HYPOCHROMIC ANEMIA

Profuse uterine bleeding is also often associated with primary hypochromic anemia. This disease has only recently been recognized as a clinical entity. It is the most common cause of severe anemia in women between the ages of 30 and 50. The essential features of the disease are hypochromic anemia, achlorhydria, and a rapid response to iron in massive doses. The hemoglobin may be as low as 15% (Dameshek⁸). Readings between 30% and 50% are frequent.

A color index less than 1, the appearance of the red cells, a normal icterus index, and the absence of urobilinogen in the urine distinguish the disease from pernicious anemia. General attention was called to primary hypochromic anemia by Kaznelson, Reimann, and Weiner⁹ in 1929. Dameshek⁸ published an exhaustive review of it in 1931. Other recent studies are those by Haden¹⁰ and by me.¹¹ Haden uses the term simple achlorhydric anemia; Mettier and Minot¹² call it chlorotic anemia.

The blood picture of hypochromic anemia is erroneously considered as always secondary to some other condition, such as hemorrhage. Hence, given a patient with

a severe form of this disease with menorrhagia as a symptom, the stage is all set for false diagnosis and false treatment. It would seem entirely logical to consider that the anemia has resulted from the menorrhagia and the immediate production of an artificial menopause would appear the only plausible treatment. In reality, however, the menorrhagia is secondary to the anemia for the menorrhagia promptly disappears when the anemia is properly treated. A thorough acquaintance with this disease is essential in order to avoid the useless castration of women, such as Gardiner-Hill found to be the case in hypothyroidism.

In treatment, the usual small pharmacopoeial doses of iron are not effective. Nine to twelve pills of ferrous carbonate, U. S. P., or 90 grains of iron and ammonium citrate, or 90 grains of reduced iron, should be given daily. Iron therapy in smaller dosage should be continued indefinitely after recovery, as the disease frequently relapses. There appears to be no necessity to give either arsenic or copper as an adjuvant to the iron.

The following case report is an example of this disease and its association with abnormal uterine bleeding.

The patient was a woman 41 years old complaining of flooding at the menstrual periods. She stated that she had been growing gradually weaker for the past 4 years. This has been accompanied by shortness of breath. The menstrual periods have been very profuse for the past two years. The last one continued for 10 days during which time she was confined to bed on account of the constant bleeding.

Examination showed a pale, well developed woman. There was no jaundice. The Rumpel-Leede test was negative. The cervix was smooth; the uterus was not enlarged and was freely movable. There was gastric achlorhydria without lactic acid on 2 tests. Radioscopic examination of the intestinal tract was negative. The stools were negative for occult blood. The hemoglobin was 42% (Newcomer-Klett glass standard); the red blood cells, 2,500,000; color index, 0.8; leucocytes and differential, normal. The blood smear showed obvious hypochromia and microcytosis. The bleeding time and coagulation time were both within normal limits; there was normal retraction of the blood clot.

The patient was given 12 pills of ferrous carbonate a day. The hemoglobin gradually increased until it reached 92% after 10 weeks. The pills were then reduced to 2 a day. Six months after beginning treatment, the patient reports that there has been no further menorrhagia. The shortness of breath and weakness have also disappeared.

It is to be noted that a complete blood examination will also detect certain rarer general causes of abnormal uterine bleeding, such as leukemia, aplastic anemia, and pernicious anemia.

SUMMARY AND CONCLUSIONS

Thrombopenic purpura, hypothyroidism, and primary hypochromic anemia are frequent causes of abnormal uterine bleeding. In the absence of local pelvic pathology adequately accounting for the bleeding, no woman should be subjected to the perils and tragedy of an artificial menopause until these diseases have been eliminated by a general examination which includes gastric analysis, basal metabolism, and a complete study of the blood.

The failure to recognize any of these diseases as the cause of uterine bleeding is all the more deplorable since a specific type of therapy exists for each of them; splenectomy or x-radiation of the spleen for thrombopenic purpura; thyroid for hypothyroidism; and massive doses of iron for primary hypochromic anemia. Primary hypochromic anemia is of particular importance since it has the blood picture always considered until recently as characteristic of secondary anemia. The hemoglobin is often as low as 30% or 40% in this disease.

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YEAST INFECTIONS*

GROESBECK WALSH
Fairfield, Alabama

PART I

TORULA INFECTION

Castellani¹ warns us that the terms "yeast-like fungi" or "budding fungi" are unscientific but are useful in practice. Yeast-like fungi are fungi which in the lesions appear as free, oval or roundish cells, some of them budding but usually with no mycelium at all. In cultures there may be only budding cells, or budding cells and mycelium, or mycelium alone. The *Coccidioides immitis*, which for purposes of utility is described in this group also, forms mycelium only on culture and spores only in lesions within the human tissues.

The term "blastomycosis" is apparently used to cover all conditions due to yeast-like fungi. The idea that yeast-like fungi can produce disease has not been received very warmly by the medical profession; and, although cases of this sort are common, the subject has received very little attention in the general study of immunity—this despite the fact that our knowledge of yeast-like fungi antedates by a very considerable time our knowledge of bacteria. It might be well to call attention to the fact that bacteria also are fungi; and, indeed in the earlier descriptions of the communicable diseases were referred to as such. They belong, it is true, to the limited class of so-called fission fungi, whose principal cultural characteristic is that they multiply by a process of transverse division. Yeast fungi on the other hand multiply by bud-

ding, by endosporulation, and by the formation of various other types of spores.

H. T. Rickett's² paper published in 1901 contains a very interesting historical review of the whole yeast subject, from which we quote freely. He calls attention to the fact that the *Oidium albicans*, the cause of thrush, was discovered by Byrd in 1840. Apparently in those days they had the same difficulty in classifying these organisms as exists at the present time, for in 1842 Gruby maintained that the *Oidium albicans* was the same organism as the sporothrix. Ricketts states that as far back as 1848 investigators began to infect animals with yeast for experimental purposes. In 1870 Grobe saw and described mycelial abscesses of the liver, and in 1891 Ross described oidia-like lung infections.

Ferran in 1889 isolated the yeast fungus from the brains of rabid dogs. Bussey in 1894 reported the first case of pyemia due to yeast. Gilchrist³ in 1896 reported the first case of blastomycosis of the skin. This was followed shortly afterward by several other interesting American reports. Yeast infections appear to have been recognized in different localities throughout the country, not because they occurred there more frequently than elsewhere (except in the San Joaquin Valley in California), but because the physicians in these districts were more vigilant in looking for their discovery. There seems to have been a large amount of inertia on the part of doctors in their unwillingness to see yeast infections or to ascribe particular diseases to them. This is noticeable even to the present day. Yeast infections are viewed as contaminations, and many seem loathe to believe that they can really produce disease. On the other hand there have been investigators who believe that yeast infections are really more numerous and much more serious than generally supposed and do not hesitate to ascribe to yeasts such common lesions as cancer.

Ricketts² in his paper to which we have referred says it is a well known fact that yeasts have been cultured from carcinoma. Whatever bearing they have on the disease is, of course, a matter of conjecture.

Yeast infection, blastomycosis, in the beginning was referred to rather cynically as

*First of a series on the subject. The second will appear in the May number.

¹From the Medical Section of the Employees' Hospital, Fairfield, Alabama.

²Read before the Jefferson County Medical Society, November 7, 1932.

the "Baltimore disease," the "Chicago disease," and more recently the "California disease," depending upon the locality in which it had most recently appeared.

Following the publication of Gilchrist's³ paper on blastomycosis of the skin came Montgomery's⁴ paper in 1902 describing the outbreak of systemic blastomycosis which had been observed in Chicago. Montgomery at this time reported thirty-two accepted cases, he having observed fourteen cases in his own experience.

Considering the incredulity with which the story of yeast infection is commonly received, it might be of interest to review one of his cases in detail. A middle aged man, admitted to Cook County Hospital in Chicago, developed lesions on the skin of his back and arms which were regarded as tuberculosis of the skin. He was first seen in 1894 and on his second admission to Cook County Hospital in 1895 some of these areas were curetted, with very unfortunate results, the man dying four days after the curettement. After his death Montgomery reported the case in the American literature as a case of tuberculosis of the skin which had invaded the lungs. Autopsy had been performed and ample specimens for full study had been obtained. The slides had undoubtedly been passed upon by men of experience and yet it was not until 1902—about seven years thereafter—that a further study of some of these slides from this case demonstrated the organisms of yeast fungus. The case was again described and included in Montgomery's series of cases of systemic blastomycosis.

No incident in all the history of yeast infection could possibly cast a brighter light upon the manner in which many of these cases have undoubtedly been overlooked. Attention having been directed toward the yeast fungus it was only a very short time until the amount of work which had been done warranted certain subdivisions of the parasites which were under observation; and although it was contended at the time—and has been frequently contended since—that blastomycotic lesions of the skin and other structures of the human body are caused by one parasite only, this position would appear to be untenable at the present time with the large amount of cultural and other information which we have.

Without indulging in any refinements in classification, we might say that this disease or these types of diseases could best be considered under three main heads:

1. Torulosis: infection with the *Torula histolytica*—or wild yeast.

2. Oidiomycosis or Systemic Blastomycosis: infection of the skin and other tissues of the human body with the budding yeast fungus.

3. Coccidioidal Granuloma; infection of the body with the *Coccidioides immitis*.

The identification of the *Torula histolytica* has been the most recent important development in the study of yeast diseases. Newton Evans⁵ states that the first infection with torula was noted in a horse in 1902 by Frothingham. The first human infections which were accurately described occurred in 1914 at the Peter Bent Brigham Hospital in Boston and were described by Stoddard and Cutler. They also identified two previous cases reported in the literature as undoubted cases of infection due to this same organism and included them in their series.

From the original four cases of *Torula histolytica* infection of the central nervous system the number has grown until at the present time in all probability thirty or more authenticated cases have been reported. The tendency of *Torula histolytica* to infect the central nervous system has done much toward placing the question of yeast infection upon firmer ground. Many objections have been raised to the culture of yeast from sputum. The objection was that yeasts grown represented contaminations from the mouth. The same criticisms have been made of yeast grown from excreta of the human body, but no one has ever intimated that the *Torula histolytica* found within the human spinal fluid in cases of infection from this disease could ever have been found there did they not bear direct relationship to the disease itself.

Torula histolytica are defined as wild yeasts. An immense number of different varieties have been described and our knowledge of them is confined to a comparatively limited number of cases. They are found widely placed in nature: on trees, fruits, bees, wasps' nests, on insects, and have been found in canned butter and in canned milk. They are wild yeasts, with a

definite function to perform, which suddenly find themselves withdrawn from their usual environment and left to shift for themselves as best they can within the human body.

The majority of *Torula histolytica* infections have been found in the central nervous system. Wortis and Wightman⁶ in 1928 described a case which they stated was the twenty-third case of human torula infection, nineteen of which had occurred in the central nervous system, all with fatal termination. Meningitis due to torula infection has been reported by others: by Newton Evans and by Mona E. Bettin.⁷

McKendree and Cornwall⁸ refer to sixteen cases reported up to 1926 involving the central nervous system. They describe in detail a case occurring in a woman, age fifty years. This is a typical case and might be advantageously described, as it has many of the salient features which accompany torula meningitis. The symptoms in this patient went back four months before she was seen by McKendree and Cornwall. Symptoms consisted of headache, vomiting, drooping of the lids and disturbance of the vision. The pain or headache was constant and was intensified by lying down. The pain continued for four weeks with very little, if any, relief. Then it stopped. For two months the patient remained perfectly comfortable. The drooping of the right eyelid continued. Three months after the first onset the pain and headache returned but this acute attack subsided in a few days. On examination her pupils were found to be equal and did not react to light. Moderate exophthalmos was present; no nystagmus. Laboratory findings were negative. Spinal tap was done and the number of cells was found to be ten, a very unusual feature in this disease; but within forty-eight hours the pathologist reported the discovery of yeast cells in the spinal fluid. The patient had no elevation of temperature but reacted very severely to the lumbar puncture by developing increased symptoms. Death ensued a few weeks later.

Severe reaction from a spinal tap in torula infection has also been induced in at least one other case. Freeman⁹ in 1930 reported a group of seventeen cases of torula meningitis and described three types of lesions

from the pathologic standpoint. These lesions were meningeal, perivascular, and embolic. He stated that the meningeal lesions were always present and sometimes present alone. The embolic lesion is not so frequent but sometimes may account for all the symptoms. He says meningitis may be patchy or may be universal; it is often dry and sticky from the increased intracranial pressure. The meninges are sometimes adherent.

Stone and Sturdivant¹⁰ report a series consisting of nineteen cases. Of the nineteen cases, all, with the exception of three, involved the central nervous system with fatal termination. One case involved the lumbar muscles with recovery; one involved the inguinal region with recovery; and one involved the lung alone with a fatal result. The average duration of life after diagnosis was made was about four months. Seven of these cases came from California.

Cases of meningitis due to torula infection are reported by Shapiro and Neal¹¹ and by Massee and Rooney.¹² These observers say in general that torula infection of the central nervous system closely resembles tuberculous meningitis, luetic meningitis, encephalitis, brain tumor or abscess. It is most frequently mistaken for tuberculous meningitis. In one or two instances, however, the increase in intracranial pressure made manifest by choked disc has been so marked that the patient has had a decompression operation done for the relief of intracranial pressure. Papilloedema has been a feature in a number of cases and has led to the suspicion that the patient was suffering from brain tumor. In several of the cases which have been more carefully studied there has been little, if any, elevation of temperature; only a moderately stiff neck; slight changes, if any, present in the deep reflexes; low leukocyte count, and absence of acute reaction on the part of the patient to the infection. These are the types of patient which closely resemble brain tumor. The cell count in the spinal fluid, as a rule, is fairly high, from two to three hundred—mostly lymphocytes—and, as a rule, the parasite is found in abundance in the spinal fluid.

Massee and Rooney¹² published their case for they felt that many of these cases have gone unrecognized. They believe that the

average duration of life in cases reported to be about three and one-half months, and they call attention to the rather chronic character of the disease. They list as frequent symptoms: headache, backache, mental symptoms, aphasias, cerebral palsies, monoplegias, and hemiplegias. Attention is called to the fact that of all the yeast parasites that *Torula histolytica* is the smallest in size, the average size being placed by McKendree and Cornwall at from one to thirteen microns.

This is the yeast fungus which most closely resembles in size at least leukocytes found in the human body, and it is very likely that this resemblance in size to the leukocytes has caused many observers to overlook them when examining spinal fluid in a fresh specimen.

In addition to the series of cases of involvement of the central nervous system Hirsch and Coleman¹³ report an acute milary torulosis of the lungs which developed after a laparotomy, the case occurring in a negress and ending in a fatality. Besides the bilateral lung involvement the patient showed definite invasion of the central nervous system with positive findings of torula in the spinal fluid.

Another case occurring in a negress, involving parts of the body other than the central nervous system, is recorded by McGehee and Michaelson.¹⁴ Torula was recovered from an inguinal abscess in this individual. The infection in the inguinal region persisted for a long time, slowly healed, but eventually went on to complete recovery. The patient ran a febrile course, however, for over two months and the whole history of the trouble lasted about eight months.

Burghausen¹⁵ reports a case of torula infection beginning primarily in the tongue which followed an injury received from a piece of hot steel in a steel plant some six months before the patient was seen by the author. When seen he showed all the evidences of a general systemic involvement, with temperature, rapid pulse, etc. Despite all forms of treatment, the patient grew steadily worse and died four months after having been seen.

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A REVIEW OF ADRENAL THERAPY

EVERT A. BANCKER, JR., M. D.*
Atlanta, Ga.

The intense interest manifested in adrenal activity during the past two years was stimulated by the achievement of Swingle and Pfiffner in preparing a potent extract from the cortex of the gland. A new and promising weapon was thus fashioned for use in treating the dreaded Addison's disease and certain types of suprarenal cortical insufficiencies. Countless animals have been sacrificed in order to study the effect of complete removal of the adrenal glands or of removal of the cortex or medulla alone. A review of the anatomy and physiology of the glands is essential for the better understanding of the present status of cortical therapy.

ANATOMY

The adrenal (suprarenal) bodies are a pair of triangular shaped glands situated on the inner aspect of the upper end of each kidney but without organic or genetic relationship with the renal system. Each gland weighs about seven grams and is about 6 cm. long, 3 cm. broad and 2 cm.

*Assistant in Medicine, Emory University School of Medicine, and Visiting Physician to the Grady Hospital, Atlanta, Ga.

thick. They are invested in a thin, strong capsule which envelops an outer zone called the cortex and an inner zone known as the medulla.¹

The origin of the suprarenal bodies is not definitely known. Embryologic studies indicate that the glands are made of two separate and distinct organs which, although intimately united as cortex and medulla, possess different origin and function.² According to the research of Aichel,³ the suprarenal in the higher mammals first appears in close relation to the wolffian body, the anlage arising from the proliferation of mesoblastic cells at the ends of invaginations of the mesothelium lining the body cavity. The individual cell groups thus arising with the several invaginations fuse into the general anlage of the suprarenal. The medullary portions of the suprarenals are thought to arise from cells which are derived from the adjacent embryonic sympathetic ganglion (celiac plexus), whose cells exhibit an affinity for chromium salts.

PHYSIOLOGY

The adrenals belong to the group of ductless glands which pour their secretion directly into the blood stream. Brown-Sequard in 1856 was the first to show that complete removal of these glands from the animal body is followed rapidly by death. This result has since been confirmed by many investigators. Death from adrenal removal is more rapid than death from parathyroid removal, the animal usually dying in one or two days after the operation. The symptoms preceding death are great prostration, muscular weakness, and marked diminution in vascular tone. These symptoms resemble those occurring in Addison's disease, which clinical evidence has shown to be associated with pathological lesions in the suprarenal glands, usually tuberculosis.

Until the work of Oliver and Schafer⁴ in 1895 the physiology of adrenal medulla activity was not understood. They injected an extract of the medullary portion of the gland into the circulation of an animal and noted the slowing of the heart beat and a rise in blood pressure. The slowing of the heart beat is due to a stimulation of the cardio-inhibitory or vagus centers for if the vagi are cut before making the injection the heart beat is not slowed. This medulla-

ry extract, which has been called epinephrine or adrenalin, also has a stimulating action upon the accelerator nerve endings in the heart, as shown by its effect upon an isolated heart maintained by an artificial circulation.

The rise in blood pressure caused by injection of adrenalin is due to its ability to cause a strong constriction of arterioles in certain areas, notably the splanchnic area and the skin. This is known as the peripheral action of adrenalin.⁵ It has been shown by Langley that adrenalin acts only upon the plain muscle which receives its nerve supply from the sympathetic autonomic system, and that its effect upon the musculature is the same as that obtained by direct stimulation of the sympathetic nerve supply which comes from the splanchnic nerves.

The secretion of adrenalin remains constant in the resting body under normal conditions. If the body is placed under a stress or change of any kind, the secretion of adrenalin changes.

Until the recent experiments in Hartman's⁶ laboratory at the University of Buffalo, it was thought that adrenalin was chiefly concerned with the maintenance of body heat. His researches indicate strongly that it is the cortical extract and not the medullary extract (adrenalin) which is responsible for the regulation of body temperature. These studies also suggest a method of assay for cortical extracts, a lack of which has hampered progress.

Adrenalin has been prepared in pure form, its chemical nature is known and it has been made synthetically outside the animal body.⁷ Abel did the most important initial work upon the isolation of adrenalin while its final isolation in pure crystalline form was accomplished by Takamine and independently by Aldrich who found the formula for the substance to be $C_9H_{13}NO_3$. It is probably derived from tyrosin.

Adrenalin when injected may cause hyperglycemia with glycosuria by liberating some of the glycogen from the liver. Cannon has described a clinical emotional glycosuria which is thought to be caused by physiologic hypersecretion of the suprarenals. When given in large doses adrenalin has a toxic effect. If given intravenously a dose of 1 mgm. may produce paralysis of

the heart or of respiration or hemorrhages from the intestinal mucosa.⁵

The cortex does not contain adrenalin but contains much lipid material, particularly the cholesterin esters which may influence the metabolism of other organs of the body. During pregnancy the cortex undergoes hypertrophy; and in some cases pathologic changes, usually hypernephromata (affecting the cortex alone) have been followed by precocious developments of the sexual organs and reversion to secondary sex characters of the opposite kind. Castration will cause changes in the cortex. Crowe and Wislocki⁸ and also Vincent⁹ were among the first to state that it was the cortex rather than the medulla which was essential to life. Since their publications this point has been proved.

THE SUPRARENALS AND DISEASE

It has been eighty years since Addison¹⁰ described a peculiar kind of anemia associated with great muscular weakness which was apparently caused by a disturbance of the adrenals. The cardinal symptoms of this disease are weakness, hypotension, vomiting and brown pigmentation of the skin. "It must be remembered that Addison's disease involves the whole of the adrenal cortex as well as medulla, and, as a study of any series of pathological specimens shows, the upper abdominal ganglia are often involved in the fibrocaceous process. The weakness may be due to involvement of the adrenal cortex, and to the tuberculous disease of other viscera which is often present; and also to lack of adrenalin which retards the onset of fatigue in skeletal muscle. We know that involvement of the sympathetic ganglia is usually associated with vomiting. The basal metabolic rate is lowered. In view of recent work it may be possible to account for the subnormal blood pressure by the defective secretion of adrenalin and the injury to the abdominal sympathetic ganglia which control so important a part of the peripheral resistance. The pigmentation is explained as follows: Adrenalin is normally prepared by the adrenal medulla from tyrosin which is stored in the skin; if the medulla is destroyed, the mother substance is not called upon and accumulates in the skin. A fer-

ment known as tyrosinase then converts tyrosin into a pigmented body or melanin, which is deposited in the malpighian layer of the skin".¹¹

Brenner¹² studied pathologically the adrenal glands from forty-three patients who died of Addison's disease and found in every case cortical destruction without appreciable changes in the medulla. Wells¹³ reported a pathologic study of the adrenals from five patients who died with Addison's disease in which there was a selective destruction of the cortex.

Britton¹⁴ has recently reviewed the pertinent literature upon the subject and concludes that, with the exception of the discovery that adrenalin is secreted by the medullary portion of the gland, no important physiologic function of the gland has been found. In March 1930, Swingle and Pfiffner¹⁵ announced the second great discovery since the time of Addison. They reported the preparation of an aqueous extract of the suprarenal cortex which maintained indefinitely the lives of bilaterally adrenalectomized cats. Since their discovery the extract has been prepared from the suprarenals of steers in sufficient quantity to administer to patients suffering from adrenal insufficiency, chiefly the Addisonian type. A most impressive group of patients has been treated at the Mayo Clinic by Rowntree *et al.*¹⁶ Twenty patients received the cortical hormone extract. Six of those treated died, three of whom were moribund when treatment was begun and the other three were unable to continue treatment after leaving the hospital. Striking improvement was noted in the other fourteen patients. Improvement was characterized by a disappearance of the nausea and vomiting and a decreasing of the pigmentation. The appetite reappeared and there was a gain in weight and strength with a slight rise in blood pressure. The usual course of treatment consisted in the administration of from 40 to 60 cc. intramuscularly over a period of a week or ten days. The extract is too irritating for subcutaneous injection but may be given intravenously if necessary.

Two months after Swingle and Pfiffner's report Hartman¹⁷ announced the production of a potent cortical extract which he called cortin and which he had used with

benefit in cases of Addison's disease and suprarenal insufficiency.

Cortical extract has also been used in cases of scleroderma, dry gangrene, gastric and duodenal ulcer and general debility with beneficial results.

Other diseases rarely involving the adrenal glands are neoplasms, infarcts, congenital malformation and amyloid disease.

THE SUPRARENALS AND CARBOHYDRATE METABOLISM

Another important function of suprarenal secretion is its influence upon blood sugar. Colwell and Bright¹⁸ demonstrated that adrenalin suppressed the oxidation of dextrose in a series of animals exhibiting the continuous utilization of dextrose during a prolonged period of intravenous administration of dextrose. They suggested that ordinary diabetes mellitus may be the result of a functional disorder of the pancreas which is dependent upon a disease of the sympathetic nervous system, and that continuous excessive secretion of adrenalin may be an important intermediate factor in this mechanism. It is well known that in hypoglycemic shock adrenalin will rapidly relieve the symptoms, probably by causing the liver to liberate more glycogen for metabolism into the blood stream. In Addison's disease one of the outstanding findings is hypoglycemia and a failure of blood sugar response after giving glucose.

THE COFFEY-HUMBER TREATMENT FOR HYPERTENSION AND MALIGNANCY

In a report to the San Francisco County Pathological Society, Coffey and Humber¹⁹ told of their five years experience in the use of endocrine gland extracts. They were attempting to find a vasodilator and a stabilizer of tissue growth. After much experimental work an extract was made from sheep suprarenal cortex which reduced blood pressure when injected subcutaneously. It was stated that injections of this extract into patients with carcinoma produced the following results: "Within from twenty-four to forty-eight hours after the first dose, the tumor begins to soften, then liquefy, and within ten days begins to slough." They also were able to study the changes in the tissues of treated patients who died. The essential changes were necrosis of carcinoma cells which did not differ from that naturally occurring in malignancy. Soko-

loff,²⁰ Charlton,²¹ and others verified the findings of Coffey and Humber. On the other hand Woglom,²² Suguira,²³ and Harris,²⁴ obtained negative results using the Coffey-Humber method. Ball²⁵ recently reported a careful study of 89 cases of carcinoma treated by the Coffey-Humber method and 27 cases untreated used as a control. He found that necrosis and sloughing did occur more rapidly in those patients who were given heavy doses of the extract but pointed out that sloughing may be a distinct disadvantage to the patient because of massive hemorrhage, extensive pyogenic infection or increase in metastases.

Operations upon the suprarenal glands have been reported for the relief of symptoms in many pathologic conditions, probably because the glands are so intimate a part of the sympathetic nervous system. Crile²⁶ reported absolute relief of symptoms in five patients with intractable or recurrent gastric ulcer after unilateral suprarenalectomy and thyroidectomy. "In a case of thromboangitis obliterans, Professor Leriche of Strasbourg removed a suprarenal capsule. The result was immediate; the pains that had become intolerable ceased at once and an incurable ulceration of the great toe scarred over rapidly." Five years after the operation the patient was still well.

Saphir and Binswanger²⁷ reported two cases of Kovacs and Omelskyj's suprarenal cortical insufficiency due to cytotoxic contraction of the gland. The lesions in these cases differ from those found in Addison's disease in that they are not caused by tuberculosis and only the cortex of the gland is affected. Crosby²⁸ reported a case of Addison's disease in a woman who died at the age of 35 years. At necropsy no gross evidence of suprarenal tissue could be discovered. Microscopically, small islands of suprarenal cortex were found near the superior poles of the kidneys.

Hyperfunction of the suprarenal system is rarely found but gives definite symptoms. In these cases supernumerary adrenals are sometimes found. Relief of symptoms may be brought about by removal of one adrenal or by section of the nerve supply to one of the glands. Bauer²⁹ reported such a case which at necropsy showed no anatomical changes.

SUMMARY

A review of adrenal therapy in the light of recent experimentation with the use of the cortical extract is given. The important literature in regard to the anatomy and physiology of the adrenals, diseases of the adrenals, the adrenals and carbohydrate metabolism and the Coffey-Humber treatment of hypertension and malignancy has been reviewed in an effort to correlate what is now known about these dynamic glands.

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THE RUBIN TEST*

PER UTERINE INSUFFLATION OF THE FALLOPIAN TUBES

CLARENCE K. WEIL, M. D.
Montgomery

One day a young woman came to my office. Ten years before she had married a man who was her social and mental inferior. A few years had passed and the glamour of their honeymoon had worn away. As her love for her husband diminished, her desire for children increased and as the years passed by this desire became her greatest passion. As she told her story, her eyes were filled with tears. She told how she had prayed for a child night after night, but month after month had been disappointed. In her waking hours her thoughts centered on this child of hers which was yet to be born and at night she dreamed of him. She was willing to undergo any sacrifice in order to have a child. In her sadness over her barrenness she likened

*Read at the meeting of the Chattahoochee Valley Medical and Surgical Association, Radium Springs, Albany, Ga., July 13, 1932.

herself to a tree that bears no fruit. She had already consulted several physicians and surgeons. Her cervix had been dilated, her uterus had been curetted and a laparotomy had been done for correction of a retroversion. Up to the time that she came to my office no examination of the husband had been made nor had anyone investigated the patency of her tubes in spite of the fact that a simple test for determining this important point had been described in the literature over ten years before. I mention this incident for two reasons: first, to indicate how very important it is to certain women to have children; and second to show you that the facts which I am going to present today are not being utilized by the medical profession in general.

Scientific data relating to the subject of sterility are of very recent date. The following quotation illustrates the manner in which this problem was dealt with in England in the early part of the nineteenth century. "If a man or woman would know whether the cause of barrenness be in themselves or in their bed-fellow, let them take a handful of barley or any other corn that will grow quickly and steep half of it in the urine of the man and the other half in the urine of the woman during the space of 24 hours. Then take it out and set it, the man's by itself and the woman's by itself, in a flower pot or something else, where you may keep them dry. Then water the man's every morning with his own urine and the woman's with hers and that which grows is most fruitful and that which does not grow denotes barrenness. Nor let any despise this trial for seeing (that) physicians will by urine undertake to tell a person of his or her diseases why should not urine also show whether a person be fruitful or not."

In an article appearing in the January 1927 issue of the *Atlantic Medical Journal*, Titus of Pittsburg, made the statement that, prior to 1920 when Rubin announced his method of determining the patency of the fallopian tubes the treatment of sterility in women was a very haphazard process. "Innumerable cervixes were dilated and uterine cavities curetted unnecessarily and without result; uncounted infections followed glass-stem pessaries and many reposition operations were performed, regard-

less of the lack of symptoms, solely on the assumption that pregnancy might follow."

The unnecessary performance of these operative procedures did not cease in 1920 and even in this year I am certain that in every city women are being subjected to operations before any knowledge has been obtained as to the patency of their tubes or the potency and fertility of their husbands. While it is not within the scope of this paper to describe all of the procedures which are of value in the study of sterility, it cannot be out of place to emphasize, in passing, the necessity of ascertaining the husband's ability to deliver viable spermatozoa before undertaking any procedure which will entail suffering or danger on the part of the wife.

The test which I am about to describe, commonly known as the Rubin test, is simple in performance, free of danger, almost painless and of great value not only in determining the patency of the tubes but also in serving as a therapeutic aid in the relief of sterility. In addition the test is of diagnostic value under other circumstances which will be mentioned later.

TECHNIC OF THE TEST

The patient is placed in the lithotomy position and the vulva cleansed with an antiseptic solution—oxycyanide of mercury being quite satisfactory. The cervix is exposed with a bivalve speculum and painted with iodine or a strong solution of mercurochrome. The anterior lip of the cervix is grasped with a short tenaculum or an Allis clamp. The reasons for grasping the anterior lip are: first, it is the least sensitive part of the cervix; and second, it is more convenient in holding the cannula in place. The cannula (F) which I use is made of soft metal which can be bent to conform to the shape of the cervical canal, and has a small rubber tip (G) near the end which fits snugly into the cervix. In addition there is a special holder (H) by means of which the cannula may be held tight in the cervical opening.

The apparatus used in this test consists of a gas tank (A) with needle-valve (B) control (a portable gas anesthesia outfit is satisfactory for this purpose), a manometer (C) and a pulsating gas meter (D) for measuring the amount of gas introduced. The gas from the tank passes directly into

the gas-meter, a side arm of which connects with the manometer. A second side arm connects through a long rubber tube with a cervical cannula. In this tube there is a safety valve (E) which may be released if

ide is used. Carbon dioxide has the added advantage that it causes less shoulder pain after introduction into the peritoneal cavity. For these reasons it is best to use carbon dioxide for tubal insufflation. It is



the pressure rises too high or when the test is completed.

The safety valve being open, the gas is turned on gradually and the rate of flow is regulated so that the bell, with a capacity of 40 cc., fills five times in the course of a minute. It is important also that the gas should not enter the uterus too rapidly since the pressure may appear abnormally high simply because the gas enters more rapidly than it can leave by way of the tubes. When the apparatus is regulated, the safety valve is closed and the gas passes directly into the uterus.

Air, oxygen, and carbon dioxide have all been used in performing the Rubin test. It takes several days for the air which escapes into the peritoneal cavity to be absorbed, a couple of hours for the absorption of the oxygen, and about fifteen minutes for the absorption of carbon dioxide. There is some danger of gas embolism when air is used but none when oxygen or carbon diox-

ide is used. Carbon dioxide has the added advantage that it causes less shoulder pain after introduction into the peritoneal cavity. For these reasons it is best to use carbon dioxide for tubal insufflation. It is

usually unnecessary to use more than 160 cc. of gas but 200 to 300 cc. may be used without danger. Rubin uses a kymograph on which are recorded the variations in pressure throughout the test and is able to make more accurate observations on the changes in intra-uterine pressure during the test in the form of permanent records. Satisfactory tests, however, can be made without the use of the kymograph.

INTERPRETATION OF THE TEST

If one or both tubes are patent, the pressure rises gradually to 60-100 mm., drops 10 to 30 points and fluctuates between these levels. If both tubes are closed, the pressure will rise to 200 mm., when the safety valve should be released and the test discontinued. When one tube or both are open, the gas passes into the peritoneal cavity and the patient, on sitting, complains of typical phrenic nerve pain. It is

wise to warn the patient of this pain in order that she may not be frightened by it. Pain will be absent if the gas fails to enter the peritoneal cavity, if a very small amount of gas enters the peritoneal cavity, or if the patient is extremely hyposensitive. If there is any doubt as to whether the gas has entered the abdominal cavity, x-ray or fluoroscopy in the vertical position will settle the question by showing the presence or absence of air under the diaphragm.

Rubin describes typical kymographic tracings in the case of strictured tubes or spastic tubes but it is more difficult to diagnose these conditions when the revolving drum is not used. For the sake of completeness, I merely mention the fact that, in the case of strictured tubes, the pressure rises to well over a 100 and drops gradually as long as the gas flows. Once the stricture has been stretched by the gas, the air slowly but continuously enters the peritoneal cavity. In the case of spastic tubes, the pressure rises to well over a 100, drops rapidly, continues to rise to the former level and falls again. This peculiar curve results from the fact that the spasm gives way when the pressure becomes high enough and allows the gas to pass into the peritoneal cavity, when the muscle again contracts and blocks the tube until the pressure reaches the high level again.

CONTRAINDICATIONS TO THE TEST

The test should not be performed during menstruation, nor in the presence of uterine hemorrhage; nor should it be performed during the acute stage of gonorrhea nor in the presence of vaginitis, cervicitis, inflammatory disease of the adnexa or a pelvic mass accompanied by fever and leucocytosis. It should not be performed during a period of amenorrhea because of the possibility that pregnancy may exist. This warning is made on theoretical grounds only since several cases have been reported in the literature in which the test was performed during pregnancy without resulting miscarriage, the physician being ignorant of the presence of pregnancy.

SAFETY OF THE TEST

Rubin reports 2,000 cases without any untoward symptoms, 670 of which were performed in his office. Mandelstam reports 1,200 cases without a complication

and Ward 3,000 without any serious effect. One may expect frequent complaints of shoulder pain, and occasionally a feeling of faintness. Very rarely actual fainting may occur. It must not be assumed, however, that one may disregard with impunity the contraindications listed above nor should one perform this test on an individual suffering from serious organic disease. In this latter group there could be little advantage in doing anything to further pregnancy. As an illustration of the carelessness with which cases may be selected for this test, I mention two cases referred to by Rubin, in both of which death occurred. One of these was a woman 42 years of age who suffered from cardiorenal disease. An excessive amount of gas was injected rapidly and death resulted due to shock. The second patient died from embolism following the injection of a large amount of gas under great pressure. She had multiple fibroids and bilateral pyosalpinx. A forcible dilatation of an amputated cervix preceded and a curettage followed the insufflation.

In general it may be stated that it is unnecessary to make tests to determine the cause of sterility before the end of three to five years of marriage, unless personal reasons, for example, the age of the wife or legal technicalities, result in a request for the test at an earlier date. If a tube is found to be open, it is unnecessary to repeat the test for diagnostic reasons but it may be repeated either during the week which follows menstruation or after intercourse for the purpose of increasing the chances of pregnancy. If both tubes are blocked, either partially or completely, the test should be repeated at least three times at intervals of a month. It is always best to perform the test within 3 to 7 days following the cessation of menstruation for the following reasons:

1. The mucosa (at this time) is thinner and less likely to close the uterine openings of the tubes.

2. It has been found that less pressure is required to force air through the tubes, probably due to the thinness of the mucosa of the tubes in the post-menstrual phase.

3. There is no secretion in the uterine cavity during the post-menstrual phase.

4. There is less danger of forcing endometrium into the peritoneal cavity.

5. There is no chance of pregnancy existing at this time.

6. By opening the tubes before ovulation occurs, a passageway is made through which the ovum, soon to be released, can reach the uterus.

Significance of the pain which follows insufflation:

1. The pressure of the gas within the uterus, even in normal cases, results in slight suprapubic pain.

2. If the pressure rises to 200 mm. without entering the peritoneal cavity and the suprapubic pain persists, it is indicative of blockage of both tubes at the uterine cornua.

3. Pain on one side in the lower part of the abdomen indicates that the tube on that side is open at the uterine end but closed at the fimbriated end. If the pressure reaches 200 without the entrance of gas into the peritoneum, the other end is blocked at the uterine cornua, but if the gas enters the abdominal cavity at a pressure of 100, the second tube is open.

4. Pain on both sides of the lower abdomen with evidence of blockage of the tubes shows that both tubes are closed at the fimbriated ends. Pain on both sides with evidence that the gas does reach the peritoneal cavity indicates that both tubes are strictured in the fimbriated portion.

In the presence of acute antelexion, the passage of the cannula may be difficult unless a uterine sound has previously been passed. If, in the presence of retrodisplacement of the uterus, the Rubin test shows blockage of both tubes, it is wise to replace the uterus manually and repeat the test before drawing any conclusions. Morgan retested 16 such cases and found that 13 showed patent tubes after the replacement of the uterus. He suggests that the tubes may be kinked by the displaced uterus.

Many authors have reported that tubes found blocked on the first insufflation were opened by the pressure of the gas and were found patent on subsequent examinations. There are almost 100 such cases reported in the literature. In a series of 1,930 cases in which the tubes appeared blocked on the

first examination, 71, or 1 out of 24, were open on subsequent examinations.

USES OF THE TEST

1. The test was devised originally as a means of study in cases of sterility and in that capacity it occupies a position in the study of the wife which is almost as important as is the examination of the semen in the study of the husband. Of the causes of sterility in women, blockage of the tubes stands foremost, being present in 38.5% of Rubin's series of 650 cases. Mench found 30% of the tubes closed in 96 cases of sterility, Brandt 40% of 55 cases, Graff 50% of 400, Cron 55% of 75, Rongy 35% of 400, others between 58% and 74%. Thus, through the use of the test, one is able to determine whether or not this common cause of sterility is present. It must be remembered that there are many causes of blockage of the tubes other than gonorrhea—tuberculosis of the tubes, tuberculous peritonitis, peritonitis following appendicitis, pneumococcus peritonitis, multiple fibroids blocking both uterine cornua, etc.

2. The test also serves as a valuable therapeutic measure in the treatment of sterility. I have already mentioned the fact that in 1 case out of 24, tubes which were previously blocked were opened by the Rubin test. The literature abounds with reports of cases in which, after a long period of sterility in the presence of open tubes, pregnancy occurred within a period of a few months, generally within one month after insufflation.

Rubin reports 205 pregnancies in a series of 2,000 upon whom insufflation was performed. 188 of these had full term babies. From his cases we may say that about one case out of ten may become pregnant as a result of insufflation alone and that in the group of patent tubes one out of six will become pregnant. Meaker reports 3 pregnancies following insufflation by less than two months; Peterson and Cron, 9 out of 30, in whom no therapeutic measure other than insufflation was employed. Of the cases reported in the literature, other than those reported by Rubin, 1 out of 13 became pregnant. It seems that the chance of becoming pregnant is better in young women, in those who have been married less than five years and in cases of secondary rather than

primary sterility. There is a slightly greater tendency to abortion in pregnancy following insufflation (3:68) and about the same chance of ectopic, (3:2000).

3. After an attack of gonorrhea, when the attack has subsided completely, the test will tell whether the disease will result in sterility through blockage of the tubes. Such a test might be of value in the case of single girls who have had gonorrhea and wish to marry or in the case of women who have contracted the disease during a first marriage and wish to re-marry.

4. The test may be used to determine the success or failure of operation intended to re-open tubes that were previously blocked. There are several types of operations that may be performed for this purpose. Of these, the one in which adhesions are removed from the fimbriated ends of the tubes is followed by the largest percentage of successes. Solomon reports 32 pregnancies out of 75 operations of this type. Schmitz reports 31 pregnancies from a collected series of 371 cases in which salpingostomy was performed. Gelhorn reports 12 cases in fifty salpingostomies. I have not been able to find any figures on the percentage of pregnancies following implantation of the isthmic portion of the tube into the uterus. Estes reported 5 pregnancies in a series of 45 cases in which an ovary was grafted into the uterine cavity and Bainbridge reported two. Sippel has reported 3 cases in which pregnancy occurred after the transplantation of the ovary of one woman into the uterus of another.

5. The test may be used to determine the patency of the tubes after operations which mutilate the reproductive tract, for example, after unilateral ectopic, to determine the patency of the other tube; after multiple myomectomy to determine whether the uterine openings have been destroyed.

6. After operation intended to close the tubes by division and ligation or by cauterization of the uterine end of the tube by means of high frequency current and an intrauterine electrode, the test may be used to determine the success or failure of the operation.

7. It may be used to determine the effect of peritonitis on the patency of the tubes.

8. The test may be used to produce a pneumoperitoneum to serve as an x-ray aid

—a safer, simpler, and less painful method than inserting a needle through the abdominal wall. The method cannot be used for the production of a therapeutic pneumoperitoneum in tuberculous peritonitis since in this condition the fimbriated ends of the tubes are generally closed.

9. The test has been used in the treatment of dysmenorrhea. Peterson and Cron found that 12 out of 24 cases of painful menstruation were relieved after insufflation and in 8 of these relief was permanent.

10. Finally, there may come a time when it will be considered an essential part of the premarital examination of women.

In my own series of a dozen cases, I have found this test to be a valuable addition to my gynecologic armamentarium. I feel that I have in no way exaggerated its value.

PNEUMONIA*

TREATMENT BY INHALATIONS OF CARBON DIOXIDE

JAMES F. ALISON, M. D., F. A. C. P.
Selma, Alabama

Carbon dioxide in the treatment of medical pneumonia was first suggested by Henderson, Haggard, Coryllos and Birnbaum¹ in a paper published in 1930. Their deductions were based upon the studies of Coryllos and Birnbaum² which indicated that atelectasis played a major part in the development of pneumonia. They showed a definite train of occurrences in the development, the common sequence being lowered muscular tonus, decreased vital capacity, bronchial occlusion, atelectasis and finally pneumonia.

It is reasonable to assume that in any upper respiratory infection there is always a possibility of plugs of mucus blocking a bronchus. This mucus may be formed in the bronchi or come from the nose and throat. Then, if blockage persists, either from lowered muscular tonus or depressed respiration, the unaerated lung collapses as the air within is absorbed by the blood. Thus the collapsed area becomes an excellent incubator for bacterial growth and activity. This sequence of events has been

*From the Marcus Skinner Clinic.

*Read before the Montgomery County Medical Society, March 14, 1933.

accepted as the origin of secondary and surgical pneumonias and acceptance of this origin for medical pneumonias is being slowly forced upon physicians. Heretofore physicians have looked upon pneumonia as an infection similar to diphtheria and typhoid fever but recent studies have definitely proven that the conception formulated by Coryllos, that pneumonia is a "pneumococic atelectasis", offers the most rational explanation of its occurrence.

than the physician's treatment of medical pneumonia.

Treatment of pneumonia by inhalations of carbon dioxide marks a great advance in medicine and when generally employed will result in a substantial reduction in the mortality of this dread disease.

The work of Henderson and his confreres was so impressive that some months ago I began the use of carbon dioxide therapy in pneumonia. My enthusiasm was expressed in an earlier paper⁴ and the subsequent re-

Table 1
Classification of patients according to age and sex.

Age	Male	Female	Total
Under 2	4	0	4
2 - 10	13	7	20
10 - 20	6	4	10
20 and Over	10	7	17
Total	33	18	51

Henderson³ aptly remarks: "It is a significant fact that no one has reported the cure of an experimentally induced pneumonia by means of a vaccine, a serum or an antitoxin. On the other hand pneumococcic pneumonia has been cured with carbon dioxide." It is evident that successful treatment of pneumonia must be directed toward the removal of bronchial occlusion, the relief of atelectasis and the institution of free drainage. No antitoxin, serum or vaccine has been developed as a specific for pneumonia. The physician must learn from the surgeon that the first step in the treatment of infections is the institution of free drainage. The treatment of the surgical pneumonias by frequent changes of posture and, recently, the inhalation of carbon dioxide has met with far greater success



Fig. 3. The apparatus employed in the treatment.

CASES, NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Average
Group I. CO ₂ Early																										
Days of Fever	4	2	2	2	4½	2	3	1½	1½	2	4	2	3	1½	1	1	3	1	4	2½	2	1	2	3	2	2.7
Hospital Days	5	3	3	3	6	4	4	3	3	2½	5	4	4	3	2	2	4	2	5	4	3	2	3	4	4	3.5
Complications	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mortality	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Group II. CO ₂ Late																										
Days of Fever	5	4	12	4	6	5	5	6	5	4	6	3														5.4
Hospital Days	7	5	18	6	8	6	8	8	7	5	8	5														7.6
Complications	0	0	†	0	0	0	0	0	0	0	0	0	†	Abscess from Hypodermoclysis												†
Mortality	0	0	0	0	0	0	0	0	0	0	0	0	0													0
Group III. NO CO ₂																										
Days of Fever	7	9	10	6	7	19	17	13	14	7	12	6	8													10.8
Hospital Days	10	12	14	8	11	22	17	13	16	7	14	6	14													13
Complications	0	0	0	0	0	*	*	0	0	0	0	0	0													2 Or 15%
Mortality	0	0	0	0	0	0	*	*	0	*	0	*	0													4 Or 30%

Table 2

Chart showing comparison between the three groups with average days of hyperpyrexia and hospitalization. Also the comparative mortality and complications.

sults have borne out the promise of the preliminary report.

METHOD OF TREATMENT

The apparatus used in the treatment of these patients is simple, consisting of a large tank of 5% carbon dioxide combined with 95% oxygen, a pressure reducing gauge, a measuring bottle and a small oxygen tent. The apparatus used in this particular work was the Guedel tent (Fig. 3) of the Foregger Company. There was no cooling device and for that reason the in-

count the treatment is easily given in the home without expert supervision.

METHOD OF STUDY

For convenience the patients were divided into three groups. Group I was comprised of those patients who were seen within 24 to 36 hours of the onset of the disease and who were treated immediately with carbon dioxide. Group II those patients who were seen 36 hours or later after the onset and were treated with carbon dioxide. Group III was composed of those patients who were not treated with carbon dioxide.

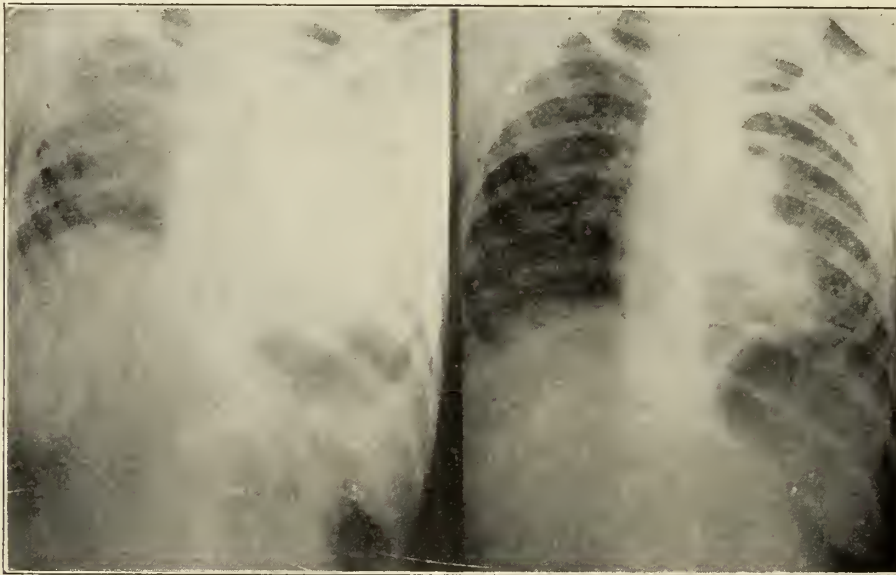


Fig. 4. The picture on the left was taken about 30 hours after the onset. It shows consolidation of the left lower lobe with the heart pulled over to the left. The picture on the right was made approximately 40 hours later after treatment with carbon dioxide inhalations.

halations were given only 15 minutes of the hour. However, this appeared to be sufficient. At the end of the inhalation the temperature within the tent is usually 92 to 95 degrees Fahrenheit. The gauge is fixed so that approximately 7 liters of the gas per minute is delivered into the tent. The concentration of carbon dioxide within the tent varies from 3.5% to 5.6%. There is no doubt that more expensive apparatus, with facilities for cooling the gas and maintaining a pleasant temperature within the tent, is more comfortable but I doubt if it is more efficacious. The advantages of the smaller apparatus are that it is simple, practical, inexpensive and can be given by inexperienced attendants as there is no danger connected with its administration. On this ac-

All patients included in the series had confirmatory x-ray plates and those who were treated with carbon dioxide early in the disease had second plates to determine the disappearance of lung pathology. Only those patients who had definite x-ray and physical evidence of pneumonia were included in the study. Several interesting observations were made while endeavoring to make an early diagnosis of pneumonia. The onset of pneumonia is characterized by the usual symptoms, *i. e.*, rigor, elevation of temperature, etc. At this time the physical signs are lacking but the x-ray will show evidence of the pneumonic process in the lungs. It is several hours later before there is definite physical evidence. The classical signs of pneumonia, bronchial breathing,

signs of consolidation, etc., are not well marked until 10 to 16 hours after the onset. It is therefore obvious that the x-ray is invaluable in early diagnosis of pneumonia. Also the improvement following treatment was first manifested by the fall in temperature and pulse rate. The physical signs persisted for 12 to 24 hours after the symptomatic improvement had taken place.

The index of success of the treatment with inhalations of carbon dioxide is measured by (1) the duration of hyperpyrexia, (2) the number of hospital days, (3) the

while in Group III there were 4 deaths, a mortality of 30%.

Patients comprising Group I, or those seen within the first 24 to 36 hours of the disease, were treated immediately by inhalations of carbon dioxide and sufficient morphine to produce rest and quietness. The gas was given in 15 minutes of each hour until the temperature fell and the physical signs showed definite improvement. No other treatment, with the exception of sponges, ice cap, etc., was employed. Immediately after the beginning of treatment

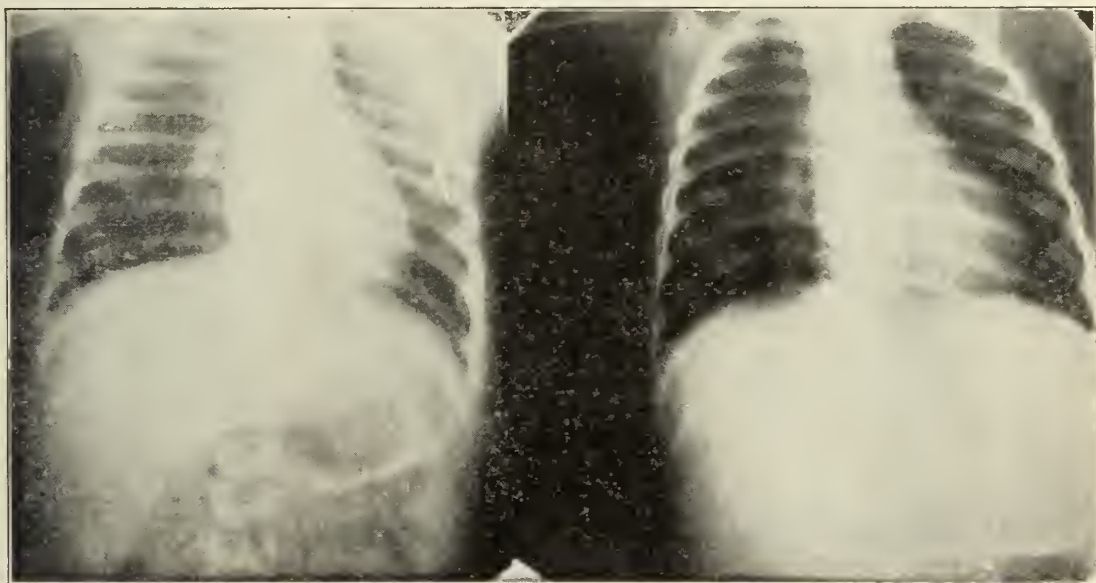


Fig. 5. Left: area of consolidation in the left upper lobe. Right: 48 hours later after treatment.

lack of complications and (4) the avoidance of fatal termination.

There were 51 patients in the series whose ages ranged from 6 months to 65 years. Thirty-eight were treated with carbon dioxide inhalations and 13 received routine symptomatic treatment. Of the 38 treated with carbon dioxide 26 received the treatment early, within 34 to 36 hours of the onset and 12 were late cases, the disease having been present 36 hours or longer.

The average morbidity for Group I was 2.7 days, for Group II 5.4 days, and for Group III 10.8 days. The average hospital stay for Group I was 3.5 days, for Group II 7.6 days, and for Group III 13 days. Complications occurred only in two patients both of whom were in Group III. The mortality rate for Groups I and II was nil,

these patients became more comfortable and showed less difficulty in breathing with a reduction in the rate of respiration. The pulse became slower and of better volume and the patients exhibited a general improvement. In those who were suffering with pleuritic pain the deep breathing apparently caused no increase in pain and after a few inhalations all patients stated that the pain was much relieved. Usually in 24 to 48 hours after the beginning of treatment the temperature began to fall and the physical signs showed improvement. The use of morphine in conjunction with carbon dioxide makes these patients much more comfortable than is the usual pneumonia patient. To secure these results it is essential to begin the treatment during the incipency of the disease. It is notable

that the temperature falls before there is any great change in the physical signs. It is usually 12 hours after the temperature has receded before there is any great amount of involution of the affected lung as shown by the x-ray and physical signs.

Of the 26 patients treated early none remained in the hospital over 7 days and 12 were dismissed after 48 hours. The majority remained 3 to 4 days. There were no relapses and no complications in this group.

These spectacular results were not obtained in patients comprising the second group but these patients were much more comfortable, spared the great suffering

common to severe pneumonias and the course of the disease materially shortened. Morphine was used liberally and no ill effects observed. Four of these patients were admitted in delirium and after several inhalations the delirium disappeared and did not recur. The same effect upon the patients suffering from pleurisy was noted as in Group I. While the temperature did not disappear as in Group I, these patients had a much lower temperature than is common with pneumonia. The average duration of temperature in these patients was 5.4 days and the average hospital stay 7.6 days. There were no complications and no deaths.

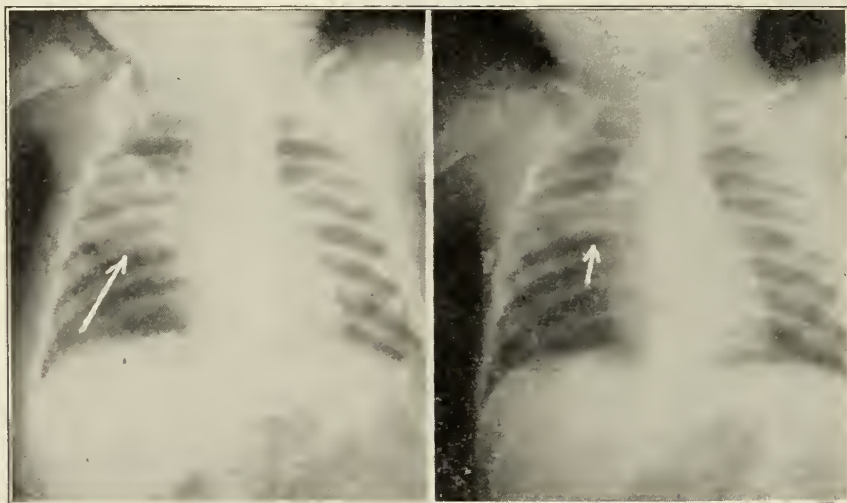


Fig. 6. Left: massive consolidation of right middle lobe of 3 days duration. Right: 36 hours later after treatment with carbon dioxide. Note the area is much smaller.

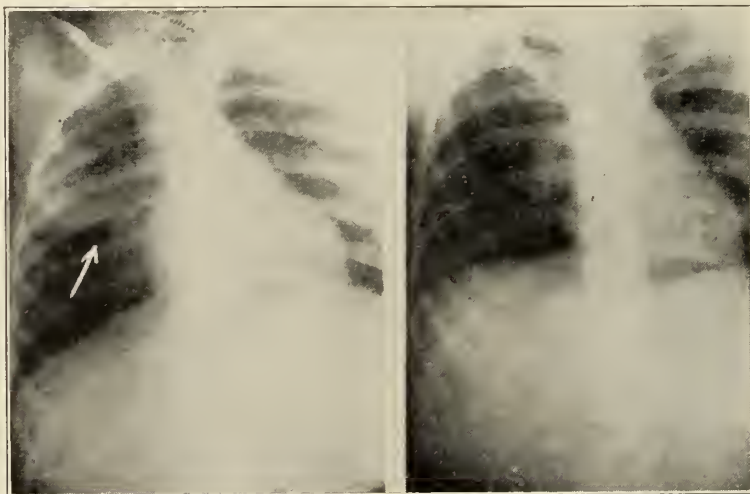


Fig. 7. Left: pneumonia of the right middle lobe. Right: 48 hours later.

Many of the patients in this group were extremely ill and the prognosis appeared grave until they reacted to the carbon dioxide inhalations.

It is obvious that the success attained in the patients of Group II was unusual. In the advanced case of pneumonia where the disease has been present for 6 to 10 days we

cannot expect a miraculous cure by any method of therapy, but there is no doubt that these patients stand a much better chance when treated with inhalations of carbon dioxide and morphine than those patients who received only symptomatic treatment. Therefore the importance of early diagnosis and treatment is paramount.

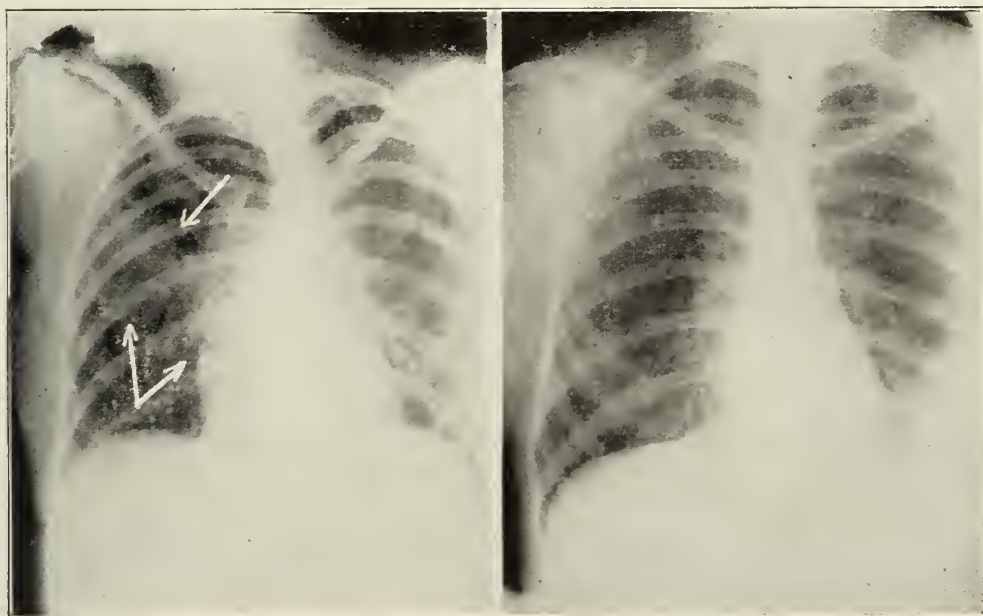


Fig. 8. The picture on the left was made before the physical signs of pneumonia were present. Note the right middle lobe involvement, the elevated diaphragm and the displacement of the heart. The picture on the right was made 36 hours later at which time the temperature was normal and patient apparently cured.

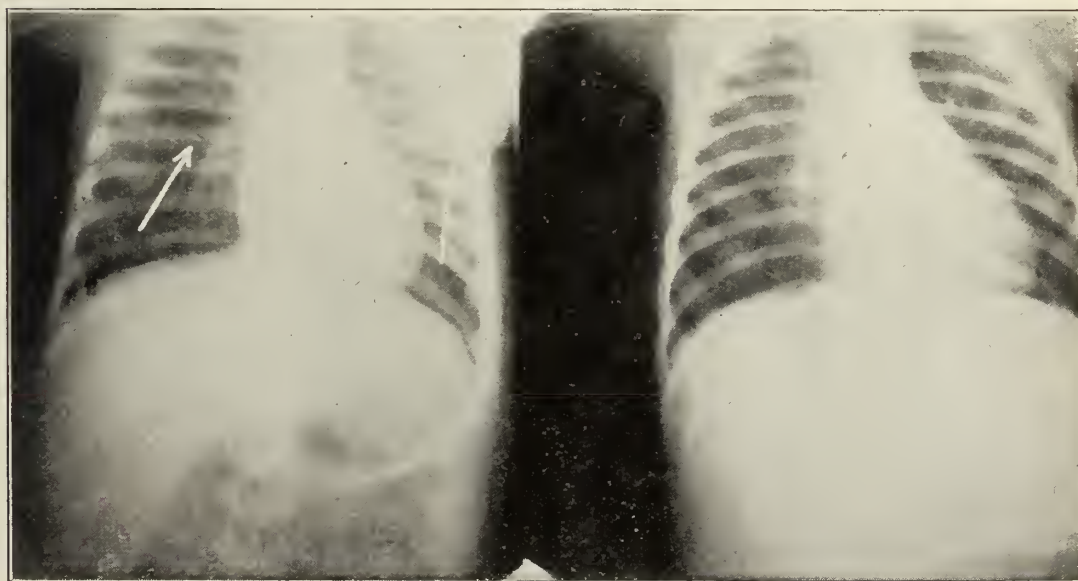


Fig. 9. Left: pneumonia of the left upper lung. The arrow in the right should point outward to a small area in the right middle lobe. The picture on the right was made 48 hours later.

The third group of patients was treated by the usual symptomatic measures including oxygen inhalations. These patients were very ill, running the usual course of pneumonia. Two patients in this group suffered complications; one an empyema,

the other a pneumococcic meningitis. The mortality rate for this group was 30%.

COMMENT

Pneumonia in its incipency can be cured by inhalations of carbon dioxide. Later in



Fig. 10. Left: pneumonia of the right upper lung of 3 days duration. Right: same patient 3 days later after treatment with carbon dioxide.



Fig. 11. Picture on the left was made 5 days after the onset. There is a massive involvement of the left lung. The picture on the right shows the same patient 3 days later after treatment with carbon dioxide.

the disease a rapid cure cannot be expected but there is no doubt that great benefit results from its use. Morphine can be used in conjunction with carbon dioxide inhalations without fear of respiratory depression, thus adding to the patient's comfort, securing rest and avoiding circulatory accidents. The course of the disease is materially shortened and complications avoided.

Henderson³ thinks that, in addition to hyperventilation and subsequent improved drainage, carbon dioxide exerts a direct bactericidal effect by its ability to change the pH of the blood. In the same paper he quotes Lord as follows: "The pneumococcus has biologic peculiarities which may be concerned in its behavior as an infectious agent. . . . Its extreme sensitiveness to acid is shown by the fact that a very slight change in the reaction of the media in which it is growing results in death of the organisms. In explanation of the factors contributing to recovery from pneumonia from a chemical point of view it may be conceived that as the evolution of the local process takes place with an increase of acidity, the acid death point of the pneumococcus is reached." Henderson sums up his remarks as follows: "Carbon dioxide in solution becomes carbonic acid and tends to exert a bactericidal action upon the pneumococcus and a resolving action upon the pneumonic exudate. These effects are best obtained when an inhalation of carbon dioxide is combined with the administration of morphine or other narcotic. While carbon dioxide tends to lower the pH of the blood and the pneumonic exudate, it does not decrease the blood alkali or tend to induce an acidosis but rather the contrary."

What chemical reaction occurs will be determined later but at present there is no doubt that something takes place which causes involution of the pneumonic process with rapid absorption of the exudate and a quick return to normal of the lung structure.

Early diagnosis is essential to gain the best results. For this reason patients whose history is suggestive but in whom the physical signs are indefinite should be x-rayed. A chest picture will usually show a pneumonic process hours before there is sufficient physical evidence. Especially is this true in bronchopneumonia. The mar-

gin between acute bronchitis and bronchopneumonia is slight and at times the signs are identical, an x-ray being the only means of differentiation. To intelligently treat pneumonia the diagnosis should be established within the first 12 to 24 hours of the disease and the inhalations started immediately. The remarkable success attained with surgical pneumonias may be explained by the fact that the patient is under close observation and the disease is recognized early.

No. 515 Mabry Street.

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Uterine Bleeding.—Radium and the x-ray radiation have a decided value in uterine bleeding, and the treatment of certain conditions by these methods is now well established. The intrauterine application of radium, and in some cases the external application of the x-rays, are of decided value in bleeding from fibroids. Care should be exercised in selecting the cases of fibroid tumor that are to be treated by this type of treatment. No tumor that has attained a size greater than a three and one-half months pregnancy, nor a degenerating or pedunculated fibroid should be treated by these methods. For these conditions surgery is the only course to pursue. Small fibromyomas should be enucleated surgically if continuation of menstrual function and fertility is desired. In cases of multiple fibromyomata a subtotal supravaginal hysterectomy is the best procedure, especially if there is any inflammatory condition in the pelvis. In the case of multiple fibromyomata where there is no pelvic inflammation or infection, and if the growths are small and not pedunculated or degenerated, then radiation gives satisfactory results in the majority of instances.—*Chernosky, Texas State J. Med., March 1933.*

THE JOURNAL
OF THE

Medical Association of the State of Alabama

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Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent.

Office of Publication
519 Dexter Avenue.....Montgomery, Ala

Subscription Price.....\$3.00 Per Year

April 1933

THE CRISIS AND HEALTH

A serious concern for the elemental things which make for the strength of a people or a nation, while not new, has met many obstacles in its slow upward path toward universal recognition and adoption. Almost a century ago Disraeli, England's far-seeing Prime Minister, said:

"Public health is the foundation stone upon which rests the strength of a nation and the happiness of a people; the public health should be the first consideration of a statesman."

Axiomatic indeed should this truism, uttered so long ago, seem to all in this scientific era of disease conquest. Scarce twenty-five years ago, so great was the odium and stigma cast upon Alabama's fair name because of the well-nigh universal prevalence of malaria, hookworm disease, typhoid fever, and other preventable diseases, that industry and "big business" looked askance not only at our own State but the entire South. In the meanwhile, medical science was pointing the way out by showing how such things come about; if these scourges are to be removed, expert workers, applying these known scientific facts, must strike, in a big way, at the very tap-roots. This meant organized effort; and thus came

into being the modern health department composed of technically trained workers in the several fields which go to make up the "specialties in public health"; for example, there must be available laboratory facilities, sanitary engineers and inspectors trained to guard water, milk and all food supplies, as well as the big problem of sewage disposal and rural sanitation; and a properly trained field force of health officers and nurses to carry to the people the knowledge and service necessary for control. These and many other activities have to be systematically conducted in order to be really productive of results.

Not until 1917—just 16 years ago—did Alabama, aided by the splendid support of the United States Public Health Service and the Rockefeller Foundation, launch an earnest fight against these crippling and destructive diseases.

Here are the figures for the deaths from certain causes for 1917 and 1932:

In 1917 there were 921 deaths from typhoid fever alone. In 1932, with more complete registration, there were only 133 deaths from typhoid.

Deaths attributed to malaria decreased from 584 to 175; tuberculosis from 3,024 to 2,094; pellagra from 1,077 to 343. These reductions are impressive, and since in many instances, in the case of the four diseases mentioned, the victim is taken during his most productive years, it means a great economic loss to the State.

Assuming the economic loss from a single death from typhoid fever to be only \$2,500, the saving of nearly 800 lives from typhoid fever in 1932 would mean an economic saving to the State of \$2,000,000. This is indeed a striking figure. When the saving of lives from other diseases is taken into consideration, there can remain no question that the financial return which is evidenced through the work that the State Department of Health has been able to do in the past fifteen years has many times repaid the modest sums which, even in a year of maximum expenditures only amounted to 1.5 per cent of the total expenditures of the State.

The succeeding legislatures, appreciative of this work which was developing the physical forces and the manpower of its people to a higher level, saw fit to provide suffi-

cient funds to permit its Health Department to grow and expand. In the present crisis expansion, of course, is out of question. Because of an already drastic reduction (42 per cent), many former activities have, through necessity, been seriously curtailed. Might it not prove a short-sighted policy, even in this crisis, to further cripple and jeopardize a work, the value of which to our people no one can question?

At this time, the problem confronting the legislature is, in truth, a simple one, and resolves itself into two questions:

First, have the monies previously allotted for health in this State been sanely, judiciously and economically expended and with full value received to our people?

Secondly, if such be the case, how much, in the face of the State's embarrassed revenues, can be afforded for so fundamental an activity as the protection of the people's health?

The figures quoted above would seem to afford a satisfactory and conclusive answer to the first question. The answer to the second can be furnished only by the members of the legislature who should seriously ponder the ultimate good of the service, rather than be swayed by a consuming desire to conserve to the State a few paltry dollars, or to lend a listening ear to the "chronic objector", be he within or without the medical fold.

J. N. B.

ROENTGENOLOGY IN THE DIAGNOSIS OF TUBERCULOSIS

Attention is directed to an excerpt from an abstract by Lawrason Brown of an article by Braeuning appearing in the *Klin. Wehnschr.*, March 5th, 1932, which merits serious consideration by all who carry the responsibility of recognizing pulmonary tuberculosis. The abstract referred to will be found under Book Abstracts and Reviews in this copy of the Journal.

It is well to state that fluoroscopy is not accepted in this country, with a very few notable exceptions, as a reliable means of recognizing inextensive tuberculous pulmonary lesions.

S. B. McP.

ANNUAL MEETING APRIL 18-21 MONTGOMERY

This issue of the Journal reaches the desks of the profession on the eve of departure of a half-thousand or more members of the Association for historic Montgomery and the sixty-sixth consecutive annual session scheduled to convene on Tuesday, April 18, at the Jefferson Davis Hotel. Perusal of the program which appeared in full in the March number has convinced the membership that failure to be in attendance would entail irreparable loss to them. Rarely has the Association had such a distinguished group of guest speakers. No basic field of practice is without its representative. In addition to pertinent subjects in medicine and surgery, essential phases of medical economics are to be discussed. The President-Elect of the American Medical Association, Dr. Dean Lewis of Baltimore, will deal with "Medical Problems Confronting the Medical Profession". The President of the Southern Medical Association, Dr. Irvin Abell, will address the Association on the subject "Some Recent Contributions of Science to the Field of Medicine". The Jerome Cochran Lecture, constituting a special order of business for 11:00 A. M. on Wednesday, April 19, will be delivered by Dr. J. Shelton Horsley, the subject being "Cancer of the Stomach and Colon". Other distinguished guests will be Dr. R. Wesley Scott, Professor of Clinical Medicine, Western Reserve University, Cleveland; Dr. W. R. Buffington, Professor of Ophthalmology, Tulane School of Medicine, New Orleans; Dr. Hugh J. Morgan, Professor of Clinical Medicine, Vanderbilt School of Medicine; Dr. Robert Carothers, Cincinnati; Dr. Frank K. Boland, Professor of Clinical Surgery, Emory University School of Medicine; Dr. Fred W. Rankin, formerly of the Mayo Clinic and now in Lexington, Kentucky; Dr. R. E. Semmes, Associate Professor of Surgery, University of Tennessee, College of Medicine, and Dr. John J. Shea, Memphis.

The host to the Association, the Montgomery County Medical Society, has planned to make this session an outstanding one in the history of the Association. Extra effort should be made by the membership to be present throughout the occasion.

S. Kirkpatrick, President.

DEPARTMENT OF PUBLIC HEALTH

Leon Clive Havens

1891-1933

A RESOLUTION

Whereas, It has pleased Almighty God, in His infinite wisdom, to remove from his earthly labors, Leon Clive Havens, M. D., Director of the Bureau of Laboratories of the State Department of Health; and

Whereas, It is the sense of this Board that in his untimely death the State has lost one of its most useful and scientific officials; the Nation one of its most enlightened and enthusiastic laboratory workers; the Medical Association of the State of Alabama a member whose scientific attainments were of an exceptionally high order; and the Department an associate whose efficiency, loyalty and devotion were characteristically outstanding; therefore be it

Resolved, That we, the members of the Board of Censors of the Medical Association of the State of Alabama, go on record as keenly regretting the passing of Dr. Havens, and that we deeply sympathize with the family in this hour of bereavement; and be it further

Resolved, That a copy of this resolution be spread upon the minutes of the Board; and, as added evidence of the high regard in which he was held, that a copy be furnished his family, and be published in the Journal of the Medical Association of the State of Alabama.

STATE BOARD OF CENSORS

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J. N. Baker, M. D., Secretary

It is entirely fitting, in conjunction with the foregoing resolution, that reference be made to the work of Dr. Havens. On assuming the directorship of the laboratory of the State Health Department in June 1922, he gave immediate attention to the possibility of extending its facilities to all parts of the State by means of branches. Geography and mail service were the main considerations governing the location of the branch laboratories. Each laboratory was to be directed by a carefully trained person, able to make all examinations done in the Central Laboratory, in order that the service rendered each doctor in the State would be uniform. The Decatur and Mobile Branch Laboratories were established in 1923. The Birmingham Laboratory, at that time operated by the city and county, came under the supervision of the Central Laboratory the same year. The following year laboratories were organized in Anniston and Tuscaloosa. In 1929, the Selma Laboratory began operation. The Madison County Laboratory at Huntsville asked supervision of the Central Laboratory in 1930. That same year the laboratory at Dothan was established. Thus his first aim had been accomplished.

What have been the results? For five years, from 1918 to 1922, inclusive, the Central Laboratory made from 10,000 to 20,000 examinations annually with between 250 and 500 doctors using the laboratory. In 1923, the first year of the operation of the branch laboratory plan, the laboratories of the State Board of Health made 58,000 examinations, an increase of 300% over the previous year, and the number of physicians for whom examinations were made increased 100%. Last year 256,461 specimens were examined by the State laboratory organization.

Prior to the coming of Dr. Havens, no provision had been made for the manufacture of biologicals. The typhoid vaccine then distributed was purchased at a cost of \$30.00 per liter to the State. Plans were immediately made by Dr. Havens for the manufacture of this vaccine. The biological laboratory now manufactures and distributes enough typhoid vaccine to immun-

ize one-sixth of the State's population each year. In 1929 the production of diphtheria toxoid was begun and successfully distributed for the first time in the United States by a state laboratory. Enough diphtheria toxoid is distributed yearly to immunize 100,000 children. The same year free distribution of 1% silver nitrate ampules was begun. The manufacture of Schick toxin, tuberculin, and rabies vaccine was begun in 1931. The manufacture of rabies vaccine alone was a saving of from \$20,000.00 to \$30,000.00 annually to the State of Alabama. The study of diphtheria toxoid precipitated with alum, making possible immunization by a single injection, was completed in 1932. The National Institute of Health has confirmed these results and the studies have been accepted for publication. The commercial cost of the products made by the biological division would have been \$102,600.00 for the year 1932. The actual cost of production was \$8,500.00.

In addition to the excellent organization and supervision of the laboratory system and biological division, Dr. Havens was able to devote some of his time to research problems, the results of which have done much toward the advancement of epidemiology and preventive medicine. In the field of scientific research Dr. Havens was universally recognized as one of the outstanding scientists of the day. At the time he became associated with the Alabama State Board of Health, the typhoid death rate was extremely high. One of the first problems, which he so ably handled, was the perfection of a typhoid medium, brilliant green-bile, which has since been adopted by the Office of Milk Investigation of the United States Public Health Service. Through the use of this medium in cooperation with the other Bureaus of the State Health Department, the deaths from typhoid have been reduced from 921 in 1917 to 133 in 1932.

An extensive study was made, in 1928, of the intensity of the hookworm problem in each county of the State. The data from this investigation furnished, for the first time, an adequate index of the severity of the problem in each locality and a base line from which to measure the progress of future control work. The same year, attention was called to the importance of Morgan's *Bacillus* infection, its pathogenicity

and biologic relationship as shown by complement fixation. Research on a modified technic for the complement fixation test for syphilis was completed and the technic adopted routinely in the State laboratories. Experiments on flocculation of variola and vaccine virus led to the perfection of a differential test between chickenpox and smallpox by the use of the patient's blood or scabs. This has proven a very useful test in this section where mild cases of smallpox and chickenpox are often difficult to differentiate. The work on antigenic properties of rabies virus had a direct bearing on the method of human immunization, and justified the use of a prolonged series of injections of the fixed virus in order to insure complete protection against the superior antigenic activity of the street viruses.

Another research problem, the results of which have had immediate practical application, was the development of media containing lithium chloride for the isolation of typhoid bacilli. The Difco Laboratories have confirmed the research and were corresponding with Dr. Havens at the time of his death in regard to preparing the lithium endo for commercial distribution.

Mention has been made only of the most practical activities and research studies of Dr. Havens during the time he was Director of the Bureau of Laboratories. He was widely known and accepted as an eminent scientist throughout the State and nation. Dr. Havens has rendered a splendid service to the State of Alabama and his loss will be felt not only by the State and the Department of Public Health but by all with whom he had been associated. His untimely passing will be felt very keenly by men in public health laboratory work throughout the country who knew of his striking ability and who will continue to use the methods and technic his ingenuity devised.

BUREAU OF ADMINISTRATION

J. N. Baker, M. D.,
State Health Officer in Charge

FUTURE PROSPECTS OF EMPLOYED PERSONNEL IN PUBLIC HEALTH WORK

During the developmental years of Alabama's health program, the selection of county health workers and their introduction to the required activities devolved al-

most entirely upon the central office. The State Health Officer is required by law to approve or disapprove the county health officer elected by the local board of health. This permitted the exercise by the State Health Officer of some selective influence in the appointment of county workers. Prior to 1927, the demand for county health officers, nurses, and sanitation officers far exceeded the supply. It was necessary to undertake the training as well as the selection and supervision of county health workers. Health officers' salaries, both State and county, were on the whole lower than the earnings of private practitioners, so that new recruits from among the not yet established men of medicine had to be induced to enter a comparatively new field and grow up with the public health movement. Salaries in this field followed the upward curve of those in business and the learned professions but always lagged considerably behind. When the economic slump precipitated commercial pay cuts, health department payrolls followed the general movement.

Efforts have been made for the past several years to decentralize insofar as possible the responsibility for securing local appropriations and for local budget making. This, while fundamentally sound in normal times, has, in combination with the depression, brought about a condition which should not be permitted to persist, once the financial gloom has lifted.

Governmental appropriating bodies are prone at all times to lose sight of the value of superior skill, training, and experience in its educational forces. This is especially true in the case of health workers who combine technical service and education. With the problems of unemployment pressing upon all sides, the tendency of such bodies is to look about for cheaper persons who can replace the trained and experienced workers. Either this or the alternative of a radical reduction of salary is the proffered solution, which makes it practically impossible for skilled workers to live and keep up the high quality of work to which they have dedicated themselves. There is no immediately obvious method of controlling this tendency, which, if left to itself to work its most devastating and demoralizing outcome, may culminate in an utter lack of regard for superior skill and competence in

medical and health work and an acceptance of pure chance as the arbiter as to what sort of health service a community shall get for its investment and what sort of living its public servants may get for their investment of time and labor in the public interest.

Such a policy, it is believed, will so far retard the advance of public health practice as to effectively outweigh the truly remarkable scientific advances of the earlier years of this century. When a scientific pursuit is robbed of its incentives toward progress, research for new truths and methods, and application of present knowledge, and even performance of routine responsibilities suffer collapse.

Here, as always, the public is the real sufferer and expensive economies once again deal a body blow to life in its most vulnerable spot. The spirit and morale of Alabama health workers must rise above this demoralizing tendency. It can do it with the support and cooperation of the medical profession of the State.

BUREAU OF VITAL STATISTICS

W. T. Fales, Director

PROVISIONAL MORTALITY BY CAUSE ALABAMA, 1932

A general summary of vital statistics in Alabama for 1932 was presented last month. While final analysis of the data will not be available for several months, we are able now to give provisional figures on the distribution of deaths by cause.

The mortality in Alabama, as in the rest of the United States, was unusually low and many causes had the lowest rates ever recorded. The most striking of these was typhoid fever, with a rate of only 4.9 per 100,000 population, based on 133 deaths.

Other low rates were for measles (six deaths, rate 0.1 per 100,000); malaria (175 deaths, rate 6.4 per 100,000); pellagra (352 deaths, rate 13.5 per 100,000); diarrhea and enteritis (417 deaths, rate 15.4 per 100,000); and tuberculosis, all forms (2,071 deaths, rate 77.2 per 100,000).

Diseases of the heart contributed the largest group of deaths, and far exceeded any other cause, the provisional figures attributing 3,198 deaths, or a rate of 117.9 per 100,000. The next most frequent cause

was nephritis (2,297 deaths, rate 84.7 per 100,000). However, the respiratory diseases, pneumonia and influenza combined, contributed a greater total (influenza, 1,312 deaths and pneumonia, 1,791 deaths). Five hundred less deaths from pneumonia this year was a large contributing factor in the exceedingly low mortality of the year.

PROVISIONAL MORTALITY STATISTICS
BY CAUSE, ALABAMA, 1932*

	1932 (Provisional)		1931	1930
	Number	Rate	Rate	Rate
Typhoid	133	4.9	6.9	7.9
Smallpox	2	†	†	†
Measles	6	0.2	6.4	3.1
Scarlet fever	35	1.3	1.1	1.4
Whooping cough	202	7.4	3.6	9.5
Diphtheria	203	7.5	7.6	7.1
Influenza	1312	48.4	40.7	35.5
Pneumonia, all forms	1791	66.0	83.4	85.8
Poliomyelitis	6	0.2	0.9	0.8
Tetanus	57	2.1	1.4	1.5
Tuberculosis, all forms	2094	77.2	85.3	86.0
Tuberculosis, pulmonary	1934	71.3	77.6	77.4
Malaria	175	6.4	8.1	12.2
Cancer, all forms	1506	55.5	54.3	53.8
Diabetes mellitus	284	10.5	10.8	8.8
Pellagra	352	13.0	16.7	23.9
Cerebral hemorrhage, apoplexy	1675	61.8	61.4	65.5
Diseases of heart	3198	117.9	116.9	134.0
Diarrhea and enteritis				
Under 2 years	417	15.4	20.6	31.2
2 years and over	208	7.7	7.0	11.2
Nephritis	2297	84.7	88.2	100.4
Puerperal state, total	476	17.5	18.8	21.3
Puerperal septicemia	129	4.8	5.8	6.2
Congenital malformations	186	6.9	7.6	7.9
Congenital debility and other dis-				
eases of early infancy	1440	53.1	57.3	71.9
Senility	506	18.7	17.5	20.6
Suicides	223	8.2	8.2	8.2
Homicides	576	21.2	22.4	20.5
Accidental burns	146	5.4	6.8	7.7
Accidental drownings	124	4.6	4.1	4.3
Accidental traumatism by firearms	92	3.4	4.4	3.5
Mine accidents	28	1.0	1.7	3.4
Railroad accidents	112	4.1	3.2	4.0
Automobile accidents	415	15.3	18.3	18.6
Other external causes	837	30.9	20.6	24.1
Other specified causes	3891	143.5	154.4	162.9
Ill-defined and unknown causes	2484	91.6	91.6	88.1

†Number too small to compute.

*The rates for 1932 are based on provisional figures. Rates for other years are based on final figures according to State tabulation of deaths.

Deaths from cancer continued to show an increase. Although the increase in deaths from this cause each year is not large, its steady growth reveals the increasing importance of the cause. Better recognition, more accurate certification of causes of deaths, as well as change in the age composition of the population, undoubtedly play a considerable part in this increase. In 1917, there were 827 deaths (rate 36.0 per 100,000) attributed to cancer; in 1925 there were 1,117 deaths (rate 45.3) while for last year there were 1,506 deaths (rate 55.5 per 100,000). Diabetes is another cause which has shown a steady increase in the last few years in spite of the more adequate therapeutic agents available to lessen its ravages.

Deaths from external causes showed an unexpected increase, due to the cyclone that visited Alabama in March, 1932. Deaths from accidental burns, firearms, mine accidents, and automobile accidents showed a decrease, which, in the case of the latter two, can probably be attributed largely to results of the present economic depression.

There was a slight increase in deaths from suicides, while homicides remained at the same disgracefully high total of 576, or a rate of 21.2 per 100,000 population. There were four legal executions.

BUREAU OF PREVENTABLE
DISEASES

D. G. Gill, M. D., Director

ERYTHEMA SCARLATINOIDES

During January and February of this year there occurred in the city schools of Cullman, Alabama, an epidemic of unusual nature. In all it is estimated that there were 150-200 children affected—practically all of grammar school age. The early cases passed unrecognized and it had become quite prevalent before called to the attention of physicians.

The symptoms were briefly: (1) The appearance of a rash over the whole body, arms and legs. The face was flushed but otherwise was clear of eruption. (2) The rash was accompanied by slight fever of one to two degrees and slight feeling of malaise. (3) Slight sore throat was common. (4) Fever subsided in two to four days and rash usually disappeared at the same time but in some cases it persisted for three to four weeks and showed evidence of pigmentation.

Examination showed that the child was not acutely ill and rarely felt ill enough to remain out of school. The rash was generalized except for the flushing of the face. In character it was macular with a tendency to be annular, fading on pressure. A bright red during the acute stage it either disappeared in two to four days or faded and became deeper brown in color. Slight desquamation occurred. Mouth and throat revealed no abnormalities. Tongue normal. No Koplik spots. No glandular enlargements.

Diagnosis: The communicable diseases suspected included German measles, scarlet fever and measles. None of these fitted the picture exactly, although German measles was the most difficult to exclude. The mild nature of the disease made it of interest largely from the diagnostic viewpoint. Two cases seen by Dr. Chas. O. King of Birmingham were diagnosed as erythema scarlatinoides. This disease is ordinarily not classed as infectious but there have been several reports in the literature where it has assumed epidemic form.

This epidemic is reported solely that its appearance in other parts of the State may be recognized.

BUREAU OF CHILD HYGIENE AND PUBLIC HEALTH NURSING

Jessie L. Marriner, Director

THE SUPERVISION OF MIDWIVES IN ORGANIZED COUNTIES IN ALABAMA

Midwives, like the poor, are with us always. Since, then, she must be recognized as a possible factor in many lives, effort is made by county medical societies to supervise the midwife and to safeguard the granting of permission to engage in midwifery.

It is the usual procedure in the counties with organized health work for the medical society to delegate this function to the county health officer and his staff. The members of the unit work out a method of instruction and supervision which, having been approved by the medical society, becomes the basis of procedure.

The midwives are instructed both in groups and individually. Group instruction is regarded as most effective for at least the first year. During this time the group is given in a series of simple lessons, often repeated, the essentials for safe midwifery. The frequency of group meetings is determined by local conditions. Not infrequently the unit feels that one meeting each year after the first, with individual visits, investigation and instruction, makes as pretentious a program as can be carried. The granting of permits to engage in midwifery is also a matter for local decision.

Whether the instruction to the midwife is given in groups or individually, certain

definite fundamentals are constantly emphasized. First, a midwife is not permitted to make digital examinations. Such examinations made by the unskilled are attended by great hazards. Second, it is important that the clothing and the person of the midwife be scrupulously clean. Third, the supplies, cord ties, dressings, etc., should be sterilized and opened only at time of use. Fourth, the law requires that prophylactic drops be put in the eyes of the new-born. These drops are supplied by the State laboratory and may be had from the county health department by any midwife. The omission of this precaution furnishes ground for court action. The law takes no chances. Do you? Fifth, the law requires that a birth certificate be properly filled out and recorded, for every live or stillbirth. These reports should be filed with the beat registrar within ten days.

Statistics are not yet available to show the number of stillbirths attended by midwives in 1932 nor of infants dying in the first month of life whose births were attended by midwives. But certainly the number of stillbirths attended by midwives in 1931, namely, 1,199, is indicative of a need for greater vigilance in the oversight of unskilled birth attendants.

F. C. M.

BUREAU OF SANITATION

G. H. Hazlehurst, Director

SANITARY PROTECTION IN THE MANUFACTURE OF RAW WATER ICE

1. Ice made from polluted water may contain disease bacteria.

2. Ice manufactured and handled without due regard to sanitary protection may be a means of transmitting disease.

The first statement is true for it is known that bacteria continue to live in ice. It is still more significant when taken with regard to manufactured ice because the storage period from time of manufacture to time of use is relatively short.

The second statement may be taken as an indictment against the practice of heedless walking over can decks with soiled shoes from which filth may drop into the can water and the dragging of ice cakes over soiled loading platforms, walkways, etc.

There are certain sanitary and cleanly principles which should be exercised in the manufacture of ice as there are in the manufacture of other foodstuffs for even now ice is used to cool liquids by direct immersion and hence any bacteria on, or imprisoned in, the ice particles are released into the beverage.

The first requirement in ice manufacture should be the use of a safe water. While it is true that bacteria and other suspended matter are extruded from the freezing can surface, the concentration is increased in the remaining unfrozen water to an extent which may result in the "freezing in" of this foreign matter. Frequent core removals make for better ice but result in increased cost and hence may be neglected by the manufacturer.

Adequate agitation of the can water is also a material aid in producing not only a better ice from a sanitary viewpoint but a harder, cleaner, more salable ice.

Frequent cleansing of can covers, supporting ledges, and cans is a feature of a properly operated plant and a clean deck with the equipment hung up is a good criterion in judging the cleanliness of plant operation.

The handling of the ice block from the time of removal to the time it is placed on the transport vehicle is important. The fact that surface impurities may be washed from an ice cake is no reason why it should be dragged through any kind of filth or be subjected to similar unclean treatment.

Chutes and floors over which the cakes are moved should be used for walkways to the least possible extent and should be raised above the level of the usual walkways whenever possible.

The United States Public Health Service has recognized the possibility of the spread of disease through ice by requiring that the ice used for cooling drinking water aboard public carrier vehicles be separated from the water.

Ice manufacturers realize the desirability of a clean product as evidenced by their use of such names as "purity", "sanitary", etc., in the names of their companies.

The Bureau of Sanitation of the State Department of Public Health is constantly endeavoring to secure a clean and sanitary product.

H. G. M.

CURRENT STATISTICS

*PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA

	January 1933	February 1933	Estimated Ex- pectancy February
Typhoid	12	11	40
Typhus	10	6	2
Malaria	34	23	52
Smallpox	4	19	27
Measles	11	46	490
Scarlet fever	89	81	82
Whooping cough	131	198	115
Diphtheria	86	86	114
Influenza	4657	847	898
Mumps	138	155	101
Poliomyelitis	5	2	3
Encephalitis	2	10	3
Chickenpox	97	91	222
Tetanus	3	3	2
Tuberculosis	244	302	314
Pellagra	17	13	16
Meningitis	10	4	6
Pneumonia	326	256	620
Syphilis (private cases)	99	110	135
Chancreoid (private cases)	3	2	8
Gonorrhea (private cases)	95	113	167
Ophthalmia neonatorum	1	0	2
Trachoma	0	1	1
Tularemia	1	3	2
Undulant fever	0	1	1
Dengue	0	0	0
Rabies	0	0	0

The Estimated Expectancy represents the median incidence of the past nine years.

*As reported by physicians and including deaths not reported as cases.

PROVISIONAL MORTALITY STATISTICS
 ALABAMA, JANUARY 1933

CAUSE	Number of Deaths Registered January 1933			Annual Rate per 100,000 Population		
	White	Colored	Total	Jan. 1933	Jan. 1932	Jan. 1931
ALL CAUSES	1115	943	2058	884.2	931.3	1030.0
Typhoid fever	3		3	1.3	5.2	1.3
Smallpox					0.4	
Measles						4.4
Scarlet fever					1.3	1.7
Whooping cough	9	4	13	5.6	4.8	3.1
Diphtheria	7	2	9	3.9	7.8	8.3
Influenza	126	83	209	89.8	40.5	64.3
Pneumonia, all forms	74	71	145	62.3	88.8	101.1
Poliomyelitis						
Tetanus	1		1	0.4	1.3	1.3
Tuberculosis, all forms	60	89	149	64.0	73.6	70.0
Tuberculosis, pulmonary	58	82	140	60.1	66.2	65.7
Malaria	4	2	6	2.6	1.7	2.2
Cancer, all forms	95	43	138	59.3	53.1	44.6
Diabetes mellitus	21	8	29	12.5	8.3	9.2
Pellagra	14	18	32	13.7	10.9	10.5
Cerebral hemorrhage, apoplexy	73	61	134	57.6	54.4	49.0
Diseases of heart	157	74	231	99.2	111.9	105.9
Diarrhea and enteritis						
Under 2 years	3	1	4	1.7	5.7	7.0
2 years and over	2	3	5	2.1	3.5	4.8
Nephritis	77	69	146	62.7	72.7	90.2
Puerperal state, total	19	9	28	12.0	12.6	15.3
Puerperal septicemia	5	2	7	3.0	2.2	5.2
Congenital malformations	11	1	12	5.1	5.2	5.2
Congenital debility and other diseases of early infancy	57	36	93	39.9	36.6	42.5
Senility	13	15	28	12.0	9.1	14.9
Suicides	15		15	6.4	9.6	4.8
Homicides	12	35	47	20.2	19.6	14.4
Accidental burns	8	7	15	6.4	5.7	13.5
Accidental drownings					3.0	1.7
Accidental traumatism by firearms		7	7	3.0	3.5	3.9
Mine accidents	1	1	2	0.9	1.7	3.5
Railroad accidents	1	4	5	2.1	4.3	3.1
Automobile accidents	18	5	23	9.9	10.0	17.5
Other external causes	26	16	42	18.0	19.6	14.0
Other specified causes	156	125	281	120.7	138.9	144.9
Ill-defined and unknown causes	52	154	206	88.4	104.9	107.7

Medical News

(Secretaries of county medical societies and other physicians will confer a favor by sending for this section of the Journal items of news relating to society activities.)

The Eleventh Annual Meeting of the Woman's Auxiliary to the American Medical Association is scheduled to convene at Hotel Pfister, Milwaukee, Wisconsin, June 12-16, 1933. Meeting concurrently with the parent body, an interesting program has been arranged for all women attending the convention whether auxiliary members or not.

* * *

The American Association For The Study Of Goiter will meet at the Peabody Hotel, Memphis, May 15-17. Among those who will contribute papers are Dr. Geo. W. Crile, Dr. Chas. H. Mayo, and Dr. Chas. H. Frazier.

At the meeting on the evening of the first day, Dr. Henry S. Plummer will deliver his Presidential Address.

Members of the profession in good standing are cordially invited to attend the sessions of the Association. They are also urged to join a special group sailing from New York City, July 26th, to attend the International Goiter Conference to be held in Berne, Switzerland, August 10-12.

* * *

Dr. J. G. Bedsole, Jackson, has been elected President; Dr. A. L. White, Thomasville, Vice-President; Dr. R. D. Neal, Grove Hill, Secretary; and Dr. G. C. McCrary, Jackson, Treasurer, of the Clarke County Medical Society.

* * *

At a recent meeting of the Chambers County Medical Society, the following officers were elected for 1933: President—Dr. W. D. Gaines, Lafayette; Vice-President—Dr. J. L. Weldon, Lanett; Secretary-Treasurer—Dr. W. H. Riser, Lafayette.

Dr. W. L. Marshall, Langdale, was elected a member of the Board of Censors.

* * *

Dr. R. E. Hale, Bellamy, has been elected President; Dr. W. E. Allen, Ward, Vice-President; and Dr. J. S. Hough, Livingston, Secretary-Treasurer of the Sumter County Medical Society.

Drs. W. E. Allen and R. C. Hill will represent the Society at the annual meeting of the Association and Drs. R. D. Spratt and J. P. Scales will act as alternates.

* * *

The Baldwin County Medical Society at its meeting on March 2nd., adopted the following resolution:

A RESOLUTION

Whereas, It has pleased the Great Architect of the universe to remove from their spheres of usefulness Dr. H. J. Sims, Daphne, and Dr. John O. Rush, Mobile, this County Medical Society would convey in a small way the respect and esteem in which these two men were held by us; therefore be it

Resolved, That this County Medical Society, having known Drs. Sims and Rush for many years and being cognizant of their great usefulness as physicians, as citizens, and as members of the medical profession, deploras their passing and here directs the Secretary of this Society to write this resolution, to be spread upon the minutes of the Baldwin County Medical Society and to be sent to the families of the deceased.

* * *

Dr. P. M. Hodgson has been elected a member of the Baldwin County Medical Society's Board of Censors to fill the unexpired term of Dr. H. J. Sims, deceased.

* * *

A RESOLUTION

Whereas, Divine Providence has seen fit to remove from the activities of this life Dr. John Osgood Rush; and

Whereas, In his passing the city, the medical profession, civic organizations and especially this Board of School Commissioners have suffered a vacancy in its ranks that cannot be refilled, and the individual members of the Board of School Commissioners of Mobile County are deeply sorrowed by the loss of his genial companionship and the realization that they have been deprived for all time of his wise counsel and commanding judgment in matters pertaining to the advancement of the best interests and ends of education; and

Whereas, He was not only recognized as one of the ablest of our medical profession but was admittedly ranked as one most interested in higher education, clean sports,

and upright character, and capable of matching his medical skill and business learning with the foremost and greatest minds; and

Whereas, Throughout his long and honorable career in his profession, home life, civic duties, and educational activities he was actively devoted to the maintenance and preservation of the highest ideals and purest principles of his profession; and

Whereas, Through his genial and graceful personality, indomitable courage, unremitting application, depth of medical learning and masterly command of all the natural and acquired gifts that go to make up an eminent doctor, he was an inspiration to all engaged in furthering the ends of the medical profession and in the perpetuation of the ethics of his profession, which means so much to a community; therefore be it

Resolved, By the Mobile County Board of School Commissioners, in meeting assembled for the purpose of adopting these resolutions, that we will ever sincerely and reverently cherish the lasting memory of our departed friend; and that, as a slight mark of our deep appreciation for and sympathy with the members of his immediate family, a copy of these resolutions be sent them; and, further, that a copy be furnished the press of Mobile, the Mobile County Medical Society, the Medical Association of the State of Alabama and the American College of Surgeons with the request that they be enrolled upon the permanent records of said Society and Associations; and, further, that a copy of these resolutions be enrolled upon the permanent records of this body as a memorial of the affectionate esteem in which Dr. John Osgood Rush was held by his associates on the Board; and of their high respect for him and his labors, which already have reared their permanent record; and be it further

Resolved, That no further business be transacted at this meeting and that the meeting do now stand adjourned out of respect to the memory of our departed associate.

Board of School Commissioners,
Mobile County.

* * *

Dr. Paul Jones, Camden, has been elected President; Dr. P. E. Godbold, Pine Hill, Vice-President; and Dr. E. L. McIntosh,

Camden, Secretary-Treasurer, of the Wilcox County Medical Society.

* * *

The eighty-fourth annual session of the American Medical Association will be held in Milwaukee, Wisconsin, from Monday, June the twelfth, to Friday, June the sixteenth. The House of Delegates will convene on Monday, June the twelfth. The Scientific Assembly will open with the general meeting held on Tuesday, June the thirteenth, at 8:30 P. M. The various sections of the Scientific Assembly will meet Wednesday, June the fourteenth, at 9 A. M. and at 2 P. M. and subsequently according to their respective programs.

Book Abstracts and Reviews

The Pelvis in Obstetrics: By Julius Jarcho, M. D., F. A. C. S., Consulting Gynecologist Hastings Hillside Hospital; Attending Obstetrician and Gynecologist Sydenham Hospital, New York City. 365 pages, 140 illustrations. Paul B. Hoeber, Inc., Publishers. New York City. Cloth. \$6.00 net.

Dr. Jarcho has presented a most extensive study of the female bony pelvis. In the discussion of the normal pelvis, he has described individual and racial variations in the size and shape of the pelvis—a matter of considerable importance for those working in large cities when patients of many races are encountered.

The author has summarized in a practical manner the voluminous literature on this subject. He has described the factors which cause pelvic deformity, has classified pelvic abnormalities, has described the influence of posture on labor in cases of pelvic deformity and has discussed other methods of management of labor in case of deformed pelvis. He has given the absolute indication for cesarean section and craniotomy and has stressed the fact that pubiotomy and symphysiotomy should be used less often. He stresses the danger of the indiscriminate trial of labor. He has described the methods of performing external and internal pelvimetry. There is also an excellent description of the methods of measuring the fetal head for comparison with the size of the pelvic inlet. Roentgenologic mensuration has been emphasized and drawings and charts have been included to illustrate this method. The book is a valuable addition to anyone's obstetric library.

A. E. T.

The Practical Medicine Series. Pediatrics. Edited by Isaac A. Abt, M. D., Professor of Pediatrics, Northwestern University Medical School. With the collaboration of Arthur F. Abt, M. D., Assistant in Pediatrics, Northwestern Medical School. 564 pages with illustrations. The Year Book Publishers. Chicago. 1932. Cloth. \$2.25.

This book contains reviews of hundreds of papers written during the past year. The authors have summarized the articles well, but the choosing of the articles was not done with great care. There are numerous articles which show a great deal of work, but are of no practical value. No valuable

information can be obtained from the new chapter on Infant Feeding. The chapters on Nutrition and Nutritional Disturbances, Infectious Diseases, and Diseases of the Blood are the most valuable ones in the book. There are several articles on the treatment of pneumonia with or without serum. The chapter on Contagion contains the more recent ideas of prevention and treatment. Many authors' ideas on toxoid and its administration are included. Several of the individual articles are worth the price of the whole book.

R. P.

Principles and Practice of Obstetrics: By Joseph B. DeLee, A. M., M. D., Professor of Obstetrics and Gynecology at the University of Chicago; Chief of Obstetrics, Chicago Lying-In Hospital and Dispensary; Consulting Obstetrician to Provident Hospital, to the Chicago Maternity Center, etc. Sixth Edition. Thoroughly Revised. 1,165 pages with 1,221 illustrations on 923 figures, 265 of them in colors. Philadelphia and London: W. B. Saunders Company, 1933. Cloth. \$12.00 net.

DeLee's *Obstetrics* is an excellent book—one of the best single volume text books of obstetrics in any language. Written primarily for students and general practitioners, it stresses conservatism, is bitterly opposed to radicalism and to unnecessary operative procedures. It is equally valuable for those who work in the most up-to-date hospitals and those who deliver in the home or in inadequately equipped institutions. It is DeLee's opinion that obstetrics can be done in the home with a lower mortality rate than in any hospital but the best.

The fifth edition was published in 1930. The new (sixth) edition contains very few revisions. There are a few additional pages dealing with local anesthesia in obstetrics, with the barbiturate compounds, the Ascheim-Zondek test and the endocrine changes of pregnancy, and some brief additions to the chapters on tuberculosis, diabetes, heart disease and syphilis in their relation to pregnancy. Some better illustrations have been added. A brief chronological chart of the important discoveries in obstetrics has been appended.

The changes in this new edition are too few to make the previous edition obsolete and the reviewer can not recommend to owners of the fifth edition the purchase of the sixth. To those who are unacquainted with DeLee's work, his new obstetrics can be heartily recommended because of its completeness, its conservatism and its excellent illustrations.

C. K. W.

treatment of undulant fever. An article by Woodward brings out the necessity of continued smallpox vaccination. He states that in four states where compulsory vaccination is prohibited, there was 113 times as much smallpox as in a population of the same size where vaccination of school children is required.

The section on tuberculosis is particularly well edited. Emphasis is placed on the early detection of tuberculosis and the effect of exposure on contacts. Chest x-rays are essential for early diagnosis of tuberculosis. The sedimentation test may prove of great prognostic value.

The advances in our knowledge of hematology during the past year is obvious when one reads the section edited by Doctors Minat and Castle. Of particular interest are the articles on pernicious anemia particularly one by Strauss and Castle on the nature of the extrinsic factor, the deficiency of which is responsible for pernicious anemia. The relation of this substance to vitamin B₁₂ is of particular interest.

The section on heart disease and diseases of the stomach is especially good and contains many important abstracts. There is an article on visualization of the liver and spleen with thorotrast.

All of the abstracts in this volume are sufficiently long and sufficiently detailed to convey to the reader all the essential items included in the original article. The reviewer feels that in this way the volume on general medicine is far superior to that on surgery though it may be that the medical articles are written from a more scientific standpoint than are those in the surgical literature.

C. K. W.

The Practical Medical Series of Year Books. Obstetrics and Gynecology. By Joseph B. DeLee, A. M., M. D., Professor of Obstetrics, University of Chicago Medical School; Chief of Obstetrics, Chicago Lying-In Hospital and Dispensary. And J. P. Greenhill, B. S., M. D., F. A. C. S., Associate Professor of Clinical Gynecology, Loyola University Medical School; Professor of Gynecology, Cook County Graduate School of Medicine; Attending Gynecologist Cook County Hospital. The Year Book Publishers, Inc., Chicago. 1932. 643 pages. Price \$2.50.

The section on obstetrics contains intimate, personal, chatty, and at times humorous notes by Dr. DeLee who edited this section. The value of the Ascheim-Zondek test and of the Friedman modification for the diagnosis of pregnancy is brought out by several American and foreign articles. An article by C. Jeff Miller stresses the advantages of non-interference and general supportive measures in the treatment of post-abort sepsis. Hoffman and Anselmino report studies on an antidiuretic substance in the blood of women with eclampsia—offering a plausible explanation of the cause of eclampsia. Sodium amylal in the control of eclamptic convulsions offers hope of improvement in therapy. The value of the x-ray in determining disproportion, twin pregnancy, and monstrosity is discussed in several articles. The editor shows his pleasure in the many articles which stress the advantages of cervical cesarean section over the classical cesarean.

Greenhill's editorial notes, in contrast to DeLee's are sober, serious statements of opinion, lacking in the penetration and wisdom of the senior editor but

The Practical Medicine Series: General Medicine. By George W. Weaver, M. D., Clinical Professor of Pathology, Rush Medical College of the University of Chicago; T. T. Crooks, M. D., Attending Staff, Norwegian-American Hospital; Lawrason Brown, M. D., Chairman of the Medical Board, Trudeau Sanatorium; George R. Minot, M. D., S. D., Professor of Medicine, Harvard University; William B. Castle, Associate Professor of Medicine, Harvard University; William D. Strand, M. D., Professor of Cardiology, Graduate School of Medicine, University of Pennsylvania; and Ralph C. Brown, M. D., Clinical Professor of Medicine, Rush Medical College of the University of Chicago. The Year Book Publishers, Inc., Chicago. Series 1932. 811 pages. Cloth. \$3.00.

In the section on infectious diseases are articles dealing with stramonium in the treatment of Parkinson's disease, atebirin in malaria, immune serum and complement in the treatment of meningitis due to the Pfeiffer bacillus, the relation between the pancreatitis of mumps and diabetes, and the use of blood transfusions from immunized donors in the

none the less keen and accurate. The section on gynecology includes articles on almost every subject dealing with diseases of women, but in the opinion of the reviewer, the following articles or groups of articles seem especially significant—human sterility, the Rubin test, uterosalpingography, appendicitis as a cause of sterility, technique of plastic operations on the tubes, the very conservative article by Dannreuther on uterine displacements, the articles on repair operations and vaginal hysterectomy, an outstanding paper by Folsom on the female urethra, the chapter on leucorrhea, two articles dealing with the frequency with which pregnancy occurs after unoperated gonorrheal salpingitis, and a group of articles dealing with the relation of the glands of internal secretions, particularly the ovary and pituitary, to the female reproductive cycle.

The book covers a vast amount of material. The editorial notes add greatly to the value of the book. It is a very practical volume. C. K. W.

The Practical Medical Series of Year Books. General Surgery. By EVARTS A. GRAHAM, A. B., M. D., Professor of Surgery, Washington University School of Medicine; Surgeon-in-Chief of the Barnes Hospital and of the Children's Hospital, St. Louis. The Year Book Publishers, Inc., Chicago. 1932. 771 pages. Cloth. Price \$3.00.

This volume contains abstracts of articles on general surgery and orthopedic surgery gathered from the medical literature of all countries. The editorial comments are brief and few in number. The use of abbreviations which are not generally accepted is less conspicuous than in the 1931 issues. There are some well selected illustrations. The abstracts have obviously been written by several men as borne out by the different methods of approach. Some of them are excellent but others are too abbreviated to be of value. Almost half of the book deals with diseases of the abdominal cavity and this section is handled better than any other part of the book.

The literature is full of arguments over malignant changes in gastric ulcers and the proper interpretation of chronic cystic mastitis. A number of new instruments and modifications of old ones are described—mechanical inventions will probably have a brief day of surgical use.

The book is of undoubted value and has been thoroughly enjoyed by the reader. It contains a wealth of material. If one expects to gain the most from it, one should read leisurely from cover to cover, taking copious notes on the various subjects and filing them away in one's index file for future reference. J. L. B.

The Practical Medical Series of Year Books. Eye, Ear, Nose and Throat. Edited by E. V. L. BROWN, M. D., Louis Botham, M. D., G. E. SHAMBAUGH, M. D., and E. W. HAGENS, M. D. The Year Book Publishers, Inc., Chicago. 1932. 651 pages. Cloth. Price \$2.50.

The section on the eye is edited by Doctors Brown and Botham, that on the ear, nose and throat by Shambaugh and Hagens. It contains a thorough review of the literature. The abstracts are succinct, the appraisals and comments of the editors invaluable. One hails an increasing literature devoted to the relationship of the specialties to general medical problems. J. T. C.

ROENTGENOLOGY IN THE DIAGNOSIS OF TUBERCULOSIS

(From an abstract by Lawrason Brown of an article by Braeuning)

The cause of the many wrong diagnoses is a mistaken conception as to how pulmonary tuberculosis begins. Early tuberculosis gives rise to no typical symptoms—usually no symptoms at all. If symptoms are present, they are hardly to be distinguished from those of other lung diseases. Early tuberculosis can seldom be discovered by percussion and auscultation, but only with the roentgen apparatus. "Tuberculosis is not heard but seen." (Hofbauer.) Our present knowledge forces us to admit that:

It amounts to malpractice to say that a lung is healthy without roentgen examination; not to make a roentgen examination if there is a suspicion of tuberculosis; not to advise roentgen examination in any disease of the respiratory organs which has given rise to subjective or objective phenomena for three weeks or longer; not to examine roentgenologically any patient who has had repeated respiratory illnesses in recent years, even though the duration of each illness was less than three weeks; to declare any patient who complains of pulmonary symptoms of any sort to be well without having a roentgen examination made.

If such examination is refused, the physician should refuse responsibility for the diagnosis. A physician who has been competently instructed in plate reading in a course lasting several weeks is by no means a reliable roentgen diagnostician, but he will make better diagnoses than after years and decades of percussion and auscultation.

The third difficulty in early diagnosis is that absence of symptoms prevents the patient from seeking the physician. The following groups of supposedly healthy persons should be examined roentgenologically.

First. All members of a household, irrespective of their age, in which is a case of open tuberculosis. Such examinations must be repeated at intervals.

Second. The nursing and service personnel who come in contact with infectious cases of tuberculosis. Examinations should

be made on entering service and thereafter every four months.

Third. All the children of a class taught by a tuberculous teacher or in which was a tuberculous child—to be examined on the discovery of the source of infection and six months later.

Fourth. Friends, betrothed, relatives and roomers of tuberculous persons.

Fifth. Persons directing the work of, working under or with tuberculous persons—the smaller and more dusty the work rooms, the more necessary the examinations.

Sixth. Milkers on dairy farms, since pulmonary tuberculosis from infection with bovine tubercle bacilli has recently been shown to be not rare.

Seventh. The children of tuberculous parents should be fluoroscoped annually up to the age of twenty-five; older persons for two years after the death of the tuberculous parent.

Eighth. Persons employed in dusty industries.

Ninth. Teacher, every third year; pupils in normal schools, on entrance and on graduation.

Tenth. Nurses in institutions for children and nursemaids.

Eleventh. Children sent to convalescent homes.

Twelfth. All members of families in which children are boarded out or are adopted.

Thirteenth. House servants in families with children or young persons.

S. B. McP.

DUTIES OF STUDENT NURSES

Student nurses spent more than two-thirds of their day doing maid and orderly work in some of the ten Eastern hospitals recently studied by Blanche Pfefferkorn, R. N., of the National League of Nursing Education. Sixty-seven per cent of the students' time on the ward in a ten-hour day was given over not to nursing care but to work that under usual circumstances would fall within the housekeeping category.

Miss Pfefferkorn points out that the distinction between nursing and non-nursing

duties cannot be arbitrarily made. A function that in one instance may be safely assigned to an unskilled worker may in another instance be unmistakably the function of the nurse. The one absolute criterion in determining assignment of duties is the welfare of the patient, she declares in describing her functional study in the January number of the *American Journal of Nursing*. When an excess amount of time is devoted to housekeeping duties, the patient, as well as the nurse's training, tends to be neglected.

Duties taking up the students' time in some of the hospitals studied include the following: setting up and dismantling trays; washing salt and pepper shakers and scouring the kitchen tables and stove; carrying drugs, ice and other supplies; scrubbing bedpans and urinals; dry mopping wards and corridors and washing window sills, chairs and beds; routine morning care of six or a dozen vases of flowers, and extended periods of making surgical supplies.

"Robert E. Neff suggests that in substituting a graduate for a student service all first year students should be replaced by maids," writes Miss Pfefferkorn, who adds: "On the basis of what some student nurses appear to be doing this suggestion would seem logical. . . . One hospital estimates that two graduates and one maid could carry all the nursing service given by ten students. This would seem to imply that this hospital recognized that one-third of the nursing time of its students was utilized for the work of maids."

Although Miss Pfefferkorn's findings specifically give new information, generally they do not. They reaffirm what many hospital and nursing administrators have known for a long time. While it is true that the hospital apparently reduces operating costs by assigning such tasks to student nurses it does not follow that it "profits" thereby, says the League's director of studies. Closer analysis may lead to the discovery of other cheaper methods of getting the tasks done, she declares. "The budget must balance—yes—but so must the values."—*From Department of Public Information, American Nurses' Association, New York.*

THE JOURNAL

OF

The Medical Association of The State of Alabama

Published Under the Auspices of the Board of Censors

Vol. 2, No. 11

Montgomery, Alabama

May 1933

CONTRIBUTIONS OF MEDICINE TO CIVILIZATION*

By
S. KIRKPATRICK, M. D.
Selma, Alabama

Historians of the social progress of man have been strangely silent as to the influence of medicine on the building of civilization; yet, it is easy to show that from earliest times medicine has been a powerful molder of thought and an ally of human reason.

It is even possible to see in the medicine man of the savages a civilizing influence of a sort, since it was he who first held out to the people the idea of the conquest of nature through a power inherent in the human mind. His magical practices were a response to that belief. We may claim him as the prophet of modern science, for he had the vision—and vision, not logical method, is all we can ask of the prophet.

When the night of savagery gives place to the dawn of civilization, we find medicine occupying the most dignified and powerful position in the community. It is in close fusion with religion, the main guiding force of any primitive civilization. The priest and physician are united in one person. Their functions are regarded as but different facets of one function. Learning has not yet been broken up into specialties. All the knowledge that the people possess of the workings of nature has its home in the temple and is centered in the person of the priest-physician. Medicine thus stands at the very heart of the civilizing influences of the age, receiving and giving on every hand. It takes a share in every aspect of the civilized life and lends its power to every advance in civilization. But, as being concerned more directly with the welfare of man than any other branch of temple learning, medicine has a character of its own,

and, as it gains authority and pride from its association with the priesthood, so we may assume it exerts in return a humanizing influence on all other forms of intellectual activity. The priest who tends the altar of the god with one hand stretches out the other hand to heal the sick. Is it not reasonable to see in this priest-physician the earliest intermediary between the terror-inspiring godhead and weak humanity? Must we not believe that it was the priest who had learned compassion in his efforts to alleviate human suffering who first ascribed compassion and mercy to Deity, thus bringing his people out from the last of the terror-filled shadows remaining over from the savage night and marking a distinct advance in civilized mode of thought?

We advance to another age. The human intellect has snapped the bond that confined it to the temple precincts and rides untrammelled through heaven and earth on the winged horses of free speculation. It is the morning of Greek philosophy. At this turning point in the development of the intellect, this critical moment for civilization, again Medicine speaks. It is the practicing physician, standing apart from the groups of disputatious philosophers, who utters words that have served to this day as a lodestone to hold investigators of nature in the path that leads past the tangle of unprofitable theory to truth. Hippocrates, the physician, was the first thinker clearly to formulate the requirement on which all modern science has since developed—the primary importance of the observed fact for all theories and speculative systems. It is a striking instance of the neglect of the field of medicine by the social historian that the immense debt that the world owes to the Father of Medicine for this service has received no recognition.

Again let us pass on. We are in the Dark Ages that followed the fall of Rome. After the clear and bright atmosphere of

*Presidential Address delivered to the Association in annual session, Montgomery, April 18, 1933.

Greece the air is stifling indeed. But with pride we realize that even in the darkest period the Spirit of Medicine has remained alive and has inspired its devotees not to remit their struggle against the obscurity. In the centers of medical teaching, such as Salerno and Montpelier—and later in Bologna, Padua and Paris—earnest men, and in the earliest days women also, are gathered together to lend each other strength in holding aloft the torch of medical science, which had been lighted in Greece and fed in Alexandria and Rome, struggling to retain for civilization some remnants of truth in the phantasmagoria of superstition now rapidly settling over the Western world. There are long periods when the torch gives out more smoke than flame, but this can be said: it never goes out, and, while all the other branches of learning are absorbed into the church and reunited with ecclesiasticism, medicine maintains its independence. To the man of the Middle Ages, medicine offered the only career for the intellect outside immediate ecclesiastical domination. To medicine alone was it given to uphold the conception of the independence of the human intellect. While, perforce, it has shared the ignorance and darkness of the dark and ignorant ages, medicine has kept, throughout, its faith with mankind to work unweariedly toward a nobler civilization and a higher conception of the dignity of man.

I have tried to show, in a few of what I conceive to be its great moments, the influence of medicine on the development of a humane and reasoned basis of civilization. But through all this early period, medicine acted also as a powerful stimulus to the various branches of physical science. In the era of temple medicine, it fostered astronomy through the current belief that the movements of the heavenly bodies influenced the course of disease. Through the early recognition of the medicinal properties of plants, medicine gave birth to the science of botany. For a millenium and a half the standard botanical authority was a work, "On Materia Medica," written by Dioscorides, who was a Greek army surgeon under Nero. Galen, the greatest physician of antiquity after Hippocrates, was also beyond question the most influential contributor to biology after Aristotle. Lat-

er, at the time of the Renaissance, and especially under the zealous fostering of Paracelsus, chemistry emerged from the ancient science of alchemy and grew strong under the protecting wing of medicine. A modern instance is the rapid development of the knowledge of x-rays and radium, a branch of physics, because of their usefulness to medicine. From the dawn of history—and doubtless from long before that dawn—medicine, in its search for the means of healing, has been one of the most active of the contributors to the general store of our knowledge of nature, the knowledge on which, preeminently, our civilization is built.

Ancient medicine made use of a great variety of therapeutic measures beside drugs. Among the chief of these were diet, massage, exercise, fresh air and sunshine, and baths. Its influence made for temperance, cleanliness, wholesome habits of life and general decency. It understood the influence of the mind on the body and inculcated serenity and a cheerful spirit. In the huge temple sanatorium on the Greek island of Cos, where Hippocrates was both student and teacher, remains recently unearthed show not only that hot and cold water was piped to the patients' room, but also that there were theaters where music and drama, so greatly honored by the Greeks, could be performed for the mental refreshment of the sick. It was a real contribution to civilization on the part of the Greek physician, that he constantly held before the eyes of his patient the ideal of the well-ordered life, temperate, tranquil and cleanly, as conducive to his return to health.

I am not speaking on the progress of medicine or on its achievements within its own field. I must therefore regretfully pass over in silence the many men, with their contributions to medical knowledge, that illumine the period of the Medical Renaissance, a period which culminated in the seventeenth century in Harvey, the discoverer of the circulation of the blood, Sydenham, the great clinician, Vesalius, founder of modern anatomy, and other illustrious men. During this period and the following hundred and fifty years, a fund of knowledge was built up concerning the human body and its functions which made possible the spectacular achievements of

modern medical science. Out of these centuries of hard, pioneering work, and gradual but steady advancement, often by trial and error, medicine emerged ready to enact a new role in relation to organized society, the role of protector of the civilization which it had taken so vital a part in forming. It can be said with truth that the present great mission of medicine is to make the world safe for civilization.

Whether we understand the world chiefly as the living of large numbers of persons in close, cooperative groups, or as the control of natural forces by man and their use in making life physically easier and intellectually broader, civilization has surrounded us with conditions so fraught with danger that it is no exaggeration to say that it is only because of the achievements of medical science in the past and by the constant vigilance being exercised by medicine every day that we are enabled to remain alive in it. The modern world is in fact as unthinkable without the science of medicine as it would be without the steam engine, without electricity, without international trade and credit. Furthermore, were we deprived for but a short time of the mediation of medical science, civilization itself would speedily turn and rend us. Between man and this intricate and perilous civilization stands at each strategic point the representative of medicine, unobtrusive but alert, like the fireman with his bucket of water at the old-fashioned movie-show. We speak of the speed with which the world has progressed in the last hundred years. Up in Chicago they are going to celebrate a Century of Progress. The American Medical Association is going to have an exhibit there. We know it will be a good exhibit, but what I am hoping is, that it will adequately bring out the point that we could never have had the rapid progress of civilization of these last hundred years unless medicine had kept one lap ahead all the way.

In this machine age, this age of huge and crowded cities and of rapid transportation by water, land and air, our organized society stands delicately poised between the heights and the abyss. I am not here referring to economic dangers but to purely physical factors of destruction, factors controllable only by medical science.

To understand the S. O. S. call that went out to medicine at the beginning of the machine age and the essential role of medicine in making this age possible, one should turn to England, which was the earliest country to introduce machinery widely into manufacturing processes. One of the first results of this change, which took place just about one hundred years ago, was congestion in the towns. Towns which before this time had remained fairly stationary in population over lengthy periods were suddenly called upon to take care of several times their former number of inhabitants. Men and women, boys and girls, little children, poured in from the rural districts to work in the newly erected factories. These people were unused to city life or to the confined conditions of factory work. Consider on the one hand the condition of the towns—well water, absence of house drainage—facilities adequate enough according to the standards of the time, so long as the population remained small and stationary, but deadly in the presence of congested population. Consider on the other hand the conditions within the factories, with no regulations to protect the health of the workers against chemical fumes, noxious dusts, high humidities, etc., and no definite and readily available information on which to base such regulations. From all this there resulted, naturally enough, an appalling mortality. The wages paid were high, compared with what could be earned on the farms, and the flower of the nation's youth poured steadily into the factory towns, to be mowed down by death almost as surely as if they had been sent unarmed into battle. Even at that early date, the machine would have killed off the population in a short time had not medical science, with its daughter sciences, sanitation and hygiene, been able to step in to show the municipal authorities and factory owners how to make it possible for the machine and mankind to live together in peace. Consider our present congested cities, with death rates no higher, in many cases actually lower, than those for rural areas. Consider our factory workers, working in light, well-ventilated rooms, under constantly increasing precautions to reduce to a minimum the health hazards incidental to their work. To state that our huge factories, our

entire factory and mass production system, would be an impossibility without industrial hygiene might seem to many an exaggeration, but we have only to look at the mortality of factory workers in the early years of the industrial era to realize its truth. And however enterprising and conscientious the municipal authorities, however willing the factory owners, they could have done nothing effective without the information which medical science, keeping one lap ahead all the way, was able to supply them.

Industrial hygiene and the medicine of industrial diseases have gone a long way since those early days. Industry itself has year by year become more complicated. The list of dangerous trades and occupations is constantly being lengthened. New processes, especially chemical processes, are being introduced almost daily. New ingredients are being used. Many of these are generally harmful. Others are harmful only under certain conditions, and others, again, only to certain persons. Between the job and the worker must stand the representatives of medicine—the sanitarian, the hygienist, the toxicologist, the allergist, and many others, including most certainly the general diagnostician—if the complicated machine of modern industry is to continue to run.

Medicine has here a two-handed job: its work is both to fit the trade to the employee and to fit the employee to the trade. Our civilization is itself a delicately adjusted piece of machinery, with parts fitting accurately together. It cannot continue in the presence of too much loss. There is loss, both human and monetary, in employing at a given occupation a man physically unfitted to remain in it. Physiology has recently been taking a more and more important place in medicine and surgery. Physiology at the factory is something that is likely to be heard more and more of as time goes on. In the efficient running of the entire plant it is as important to get the best service from a man as from a machine. Someone who understands mechanical engineering must state the conditions under which a given machine will yield the best service. For getting the best service from the human working force, the advice of the physician

with up-to-date knowledge of physiology is just as necessary.

The increased speed of travel of all sorts makes it imperative that men engaged in public transportation, in such positions as railroad engineers and signalmen, motor-men on public bus lines, and airplane pilots, should be physically fit for their jobs. The lives of hundreds frequently rest on the power of judgment of one man, and no man's judgment can be depended on if he is suffering from an ailment. The dangers arising from this situation would be enormously increased were not medicine at hand to detect insidious disease and physical disabilities.

Dependency is another problem that may become acute in our present civilization. Civilization cannot carry on with too heavy a load of dependents around its neck. The prevention of dependency is in the main a medical problem. The unhealthy person sooner or later becomes a dependent. By the prophylactic treatment of the eyes of newborn babies, medicine is every day preventing dependence from blindness. By advice leading to prophylaxis of rickets, it is preventing dependence from crippling. But to attempt to list in detail the various methods of prophylaxis and of cure, medical and surgical, of defects that lead to dependency would be far too lengthy a task.

Civilization cannot carry on with too great wastage of human life or human energy. The day is past when spots of civilization existed as oases amid vast deserts of barbarous life, from which fresh workers, eventually fresh citizens, could be recruited. Our civilization has need of its men and women, and to medicine it entrusts their preservation. Civilization cannot afford to lose the infant life for which the energy of gestation has been expended. It cannot afford to lose the boy or girl for whom it has expended thousand of dollars in education. How has medicine responded to the trust? In 1800 the average length of life was 33 years, in 1924 it was 58 years,¹ and we know it has been increasing ever since. We feel entirely justified in asserting that by far the greatest part of that increase is due to medicine alone.

The subject of pestilence is a gloomy chapter in the history of mankind. Again and again the clock of civilization has been

set back for generations by the visit of pestilence. One-quarter of the population of Europe is said to have died of the "Black Death" in the middle of the fourteenth century. Modern medicine has no more proud record in the tale of its contributions to civilization than that of the virtual control which it now exercises over most of the historic epidemic diseases.

The ravages of smallpox before the introduction of vaccination by Jenner in 1798 can hardly be grasped by the imagination today. At the end of an epidemic in the village of Ware in England in 1722, there were only 302 persons out of a population of 2,515 who had never had smallpox. So common was the disease that it was considered a valuable mark of identification of an escaped criminal or missing person if it could be stated that he was not marked by smallpox. This scourge was by no means confined to what we today called the underprivileged classes; it invaded boldly the palaces of kings and the luxurious homes of the wealthy. Epidemics recurred at frequent intervals. Edinburgh had seven epidemics in the twenty years from 1744 to 1764. In this country, Boston was visited by twelve epidemics in the forty-three years between 1649 and 1692. The menace of smallpox was very real and ever present to every home in Europe and America for many generations. As we all know, smallpox is today a rarity wherever vaccination is usual and could be entirely stamped out were vaccination and revaccination at proper intervals universal.

Another disease which has caused appalling destruction of life and created, wherever it appeared or its advent was feared, a panic which stopped local business, tied up shipping in harbors and generally brought the wheels of civilized life to a standstill, so that the shock was felt in far distant places, was yellow fever. Yellow fever was first brought from the African coast to the West Indies, where it became endemic, and whence it spread to South and Central America and periodically invaded our own country. The elimination of this disease as a scourge of the tropics and warmer portion of the temperate zone is one of the most dramatic of the triumphs of medicine. It was complete within a few years of the discovery of the mosquito as

means of its spread. It is needless to repeat here the story of the heroism in Cuba—it is known to every one of us. And has ever heroism had more bountiful fruit in the shape of blessings to mankind? The saving of life and money in our own country has been enormous. Statistics cited by Quine² show that in 200 years there were 95 epidemics of yellow fever in this country; in the last hundred years, 500,000 cases with 100,000 deaths. A memorial addressed to President McKinley in 1897-8 by the American Public Health Association stated that the epidemic of 1878 had cost Alabama, Mississippi and Louisiana 16,000 lives and a material loss of one hundred million dollars. We are now forever assured against the recurrence of that catastrophe. And this we owe in the main to the energy and persistence, in face of ridicule, of Gorgas, whom we are proud to claim an Alabamian. Havana had for generations been the center of dissemination for yellow fever. Gorgas eradicated the *stegomyia* mosquito from Havana.

The conquest of yellow fever has opened vast areas to commercial enterprise in Central and South America. When one considers some of the many products of those countries that are now being exported regularly in large quantities—coffee, bananas, the rare woods and the precious dye wood—one is able to get an idea of the impetus to world trade and to the civilizing of backward regions that was given by the removal of the pall of death that had hung over these fruitful lands.

The most widespread of all endemic diseases is malaria and just as surely as yellow fever has it barred large and important areas of the globe to modern civilization. The digging of the Panama Canal was impossible until medical science had shown that malaria and yellow fever were spread by infected mosquitoes and had thus indicated the only effective mode of guarding the workers from these diseases. In 1881 these two diseases had utterly defeated the attempts of the French to construct the canal. The monthly death rate of the 18,000 workers at that time is said to have ranged from 6 to 17.5 per cent. Nothing but a continuous influx of fresh recruits prevented the utter obliteration of the working force. Under Gorgas the death rate for

May 1908, in a working force of nearly 45,000, is given as 1 per cent. Today the Canal Zone is as healthful as well chosen localities in the temperate zone.

Results as striking in their way in the conversion of death-stricken communities into centers of health and enterprising life by eradication of malaria have been achieved on smaller scales in various parts of the world. Regions seemingly the natural abode of tears and death have been made to blossom into health and prosperity by this measure alone. Notable instances are found among the rubber plantations of the Malay Peninsula. A malaria-infested region cannot remain an enterprising region; the fight against the disease takes up too much of the patient's strength to leave that surplus that is required for mental and bodily energy. Walsh³ has advanced the theory that the rapid decline of the Greek intellect after its brief period of brilliant blooming may be explained by malaria becoming endemic in Greece. The assertion has further been made that the real conquerors of Rome were not the Goths and Vandals, but the plague and malaria.

Ancient history affords more than one example of mysterious deterioration, apparently from within, in hitherto vigorous nations. Egyptian history, Walsh³ points out, shows a number of occasions when a foreign invader overcame the country with what seems unexplainable ease. He suggests that the hookworm, which infests Egypt today, may have been the cause of these "ups and downs" in Egyptian history. Gladstone's advice to statesmen to "study large maps" might well be followed by the student of the relations between medicine and civilization. When one looks at a map of the world one sees vast areas at present scantily populated, which historical records and the remains of large cities show us were at one time the seats of thriving populations of high culture. Such regions are found in Mesopotamia, Asia Minor, North Africa and Cambodia. Wars and changing political conditions are usually held responsible for such ruins, but in the light of our present knowledge it seems probable that endemic diseases that gradually but surely undermine and destroy the physical and intellectual stamina of a people have contributed largely to this terrible

wastage, this periodic complete loss of the results of the efforts of generations of men to build civilization.

A nation is not an organism in a biologic sense. Biologically, there would seem no justification for thinking of the loss of vigor and the final perishing of a nation with its accumulated culture as natural aging and death—an inevitable process. It would seem not at all a fanciful conjecture that medical science, especially by the eradication of endemic diseases, should eventually succeed in putting a stop to the periodic decay of civilization, so that man might not lose the fruits of his predecessors' labors but continue their work in uninterrupted progress.

It is, of course, impossible to name in this paper all of the important diseases which take their toll of civilization and which medicine has already done much to control and should cause not long hence to disappear entirely. Tuberculosis is one of the most important of these. Mention of typhoid cannot be omitted, nor of dysentery. The fact that the great Mississippi flood of a few years ago, which dislocated living conditions for large populations over a wide area, was not followed by grave epidemics is a remarkable instance of the value of medical knowledge and methods to civilization. Until recent times, serious epidemics were the unescapable sequel of every great flood, cyclone or earthquake in populous regions, adding fresh terror to the terror survived. The brilliant record of typhoid prophylaxis in the late war is too fresh in our memories to need rehearsing.

Quick transportation between different parts of the world, as by the airplane, has greatly increased the need of vigilance in guarding civilization from epidemics. It has always been the travelers who have disseminated disease. The returning crusaders spread smallpox through Europe. In recent years cholera has been similarly spread by religious pilgrims in the East. Methods of quarantine were long ago worked out which serve very well when transportation is by sea and the length of the voyage allows disease to manifest itself before port is reached. But in air travel this measure of guarantee is lost. It is now possible to travel half way round the world

within the incubation period of a disease. Civilizations inferior to our own from the sanitary standpoint may be brought, as it were, overnight to our doors. It would be an easy matter for infected mosquitoes to reach us by this means.

This conjures up the picture of what might have happened if medicine had not, as I expressed it at the beginning of this paper, kept one lap ahead of civilization in its progress. And it is urgent that it should continue to step boldly forward. The path is assuredly full of dangers, as it always has been. But she is confident in her protector. And we, in whom she places her trust, are confident too, as we look up to the Spirit of Medicine, which through so many ages has been our guide, from dawn until dusk, and then through long hours of darkness, in our quest of the light of science, which no night shall obscure.

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Treatment of Myocardial Syphilis—The treatment of myocardial syphilis is yet in the experimental stage. It is well to remember that the condition governing the therapy largely depends upon the individual's age and the symptoms. It is probable that, in the earliest stages of the disease, especially in young adults, arsphenamine would be tolerated with beneficial results. If there are distinctive symptoms of cardiac failure and possible aortic involvement and the age exceeds forty years, then the patient should be placed at absolute rest, the heart strengthened and rested, and mercury and iodides judiciously utilized. Bismuth seems to be of considerable benefit.

It is to be borne in mind that one's result probably will depend upon the gradual destruction of the spirochete, strengthening of the heart, the prevention of the syphilitic cellular reactions and the reparative changes which may be so extensive as to produce a most serious impairment.—*Norris, South. M. J.*, May 1933.

THE JEROME COCHRAN LECTURE CANCER OF THE STOMACH AND COLON*

By
J. SHELTON HORSLEY, M. D.
Richmond, Va.

THE INCIDENCE OF CANCER

Cancer of the gastro-intestinal tract looms large as a cause of mortality from cancer. Deaths from cancer have been steadily increasing since 1900. In 1920 the number of deaths from cancer in the Registration Area of the United States was 72,931, in 1930 115,265, and in 1931 118,141. The death rate per 100,000 of the population has also increased from 63.0 in 1900 to 83.2 in 1920, 97.2 in 1930 and 98.9 in 1931.

In the last complete records that we have, cancer of the stomach and duodenum was responsible for 25,397 deaths in 1931, and cancer of the intestines and peritoneum was responsible for 17,919. This makes 43,316 deaths which occurred in 1931 from cancer of the stomach, intestines and peritoneum.

These figures are sufficient to impress the extreme importance of malignancy of the stomach and colon, forming as it does more than one-third of all of the deaths from cancer. The situation is quite different from what we have in such diseases as the acute infectious diseases, malaria and diseases of infancy which are now definitely on the decrease and some of which have almost disappeared. The steady increase of deaths from cancer, particularly cancer of the stomach and large bowel, challenges our attention at once. The challenge is still more important because the principle of the treatment of cancer of these two viscera is generally recognized as only one type of procedure—surgical excision. To be sure, in some instances radiation is helpful, but I do not know of any authority who would recommend radiation in any form as a cure for cancer of the stomach or cancer of the colon when the lesion is resectable, though some form of radiation is the most effective treatment for lymphosarcoma, certain types of teratomas and for cancer of the cervix, and, in combination with surgery, for cancer of the mouth and neck.

*Delivered to the Association in annual session, Montgomery, April 19, 1933.

THE CAUSE AND FREQUENCY OF CANCER OF THE
STOMACH AND COLON

Much has been learned about cancer both from laboratory and clinical research, but a pessimistic attitude is frequently supported by the argument that we can do nothing for cancer because we do not know its cause. Such logic is fallacious because there are diseases that we can treat effectively both by preventive and curative measures whose direct cause is still unknown. Then, too, even in acute infectious diseases that are due to well recognized micro-organisms, we do not know the cause of the micro-organisms themselves. Cancer is doubtless protean in origin; there are many different causes and there are many different types of clinical entities that may be classed under the general term malignancy. The essential condition that seems to be common in all malignancies is that the cells appear to grow without law and order, and that they have an inherent tendency to destroy life. The conditions vary in many degrees and may range from a small basal cell cancer that does not metastasize but exists for years without marked advance, to the extremely malignant type of rapidly growing sarcomas which destroy life in a few weeks or months after the first symptoms have been manifested.

Cancer of the stomach and of the colon also varies somewhat in malignancy. In some instances the growth proceeds very rapidly and even early recognition and prompt treatment is often followed by recurrence. This, fortunately, however, occurs in only a minority of the cases, and is less common in the colon than in the stomach. Radiation as a treatment of cancer of the stomach would be prohibited because of the position of the stomach, beneath the liver and in front of the pancreas. And very heavy radiation sufficient to check the cancer would, in all probability, injure the liver and pancreas so much as to be fatal. Carcinoma of the stomach or of the colon is usually not markedly radio-sensitive. There are, however, infrequently occurring cases of lymphosarcoma of the stomach and colon in which even a mild application of radiation is very beneficial.

According to statisticians, such as Dublin, we can look forward to an increase of mortality from cancer for at least twenty

years, because the decrease in death rate due to the prevention and cure of diseases of infancy and childhood and of acute infectious diseases has put more and more individuals into the "tropic of cancer". There is, therefore, more material in which cancer may develop. Though cancer is no respecter of ages, it is chiefly a disease of middle and old age and cancer of the stomach and colon particularly is much more likely to develop after the patient is thirty-five years of age, though not unknown in the third or even in the second decade of life.

Statistics from responsible private sources seem to show that cancer of the stomach is responsible for even more deaths than appear in the statistics of the United States Census. They also show that cancer is found to be apparently more prevalent in regions in which postmortem examinations are more frequently made. This is doubtless due to the fact that many deaths from cancer are not detected unless a necropsy is done. In patients who die of vague and indefinite complaints, there is not infrequently found a cancer with metastases from the stomach or colon, in which the primary cancer may not have been large and the metastases constitute the more prominent lesion.

In the first stage of cancer the cells in the tissue break away from the control of the surrounding cells and of the tissues. So far as we know, cancer does not originate in healthy tissue. In regions of the body that can be readily inspected, such as the mouth, skin, cervix uteri and rectum, cancer always develops on some pre-existing lesion, either an inflammatory lesion, an ulcer, a benign tumor or possibly some misplacement of the tissue. It seems reasonable to conclude, then, that if this general law holds in cancer elsewhere, it should be true of cancer of the stomach and of the colon, where direct inspection is impracticable.

THE DIAGNOSIS AND SYMPTOMS OF GASTRIC CANCER

If an early diagnosis were always possible, or if cancer caused pain in the early stage which would lead to a diagnosis, the proper application of operative measures would undoubtedly result in a large percentage of cures. There seems to be at pres-

ent no immediate hope of making any serum diagnosis in cancer of the stomach and colon. To be sure, there is one small type of tumor in which the serum diagnosis of malignancy can be made with considerable accuracy; teratomas of the sex glands have been found to give the same reaction as pregnancy, and Ferguson, of the Memorial Hospital in New York, has found that by concentrating the urine a teratoma of the sex glands will show the Prolan A from the pituitary gland as in early pregnancy. This is due to the nature of the tumor cells, being intimately related to the trophoblastic and other cells of early pregnancy which stimulate the pituitary gland. This reaction is not only diagnostic, but is a great aid to treatment, because the chief treatment in these teratomas is radiation. When radiation renders these cells inactive, or destroys them, the reaction is not found, but when they begin to become vigorous again the reaction reappears.

So far as our present knowledge goes we must rely upon the clinical suspicion of early cancer, which is either confirmed or denied by a complete laboratory investigation, the chief of which is a roentgenologic study. An x-ray examination by one who is competent to do this type of work is the most helpful single means of diagnosis of cancer of the stomach or colon, except in the lower sigmoid where direct inspection through a proctoscope may be possible.

Cancer of the stomach is more frequent in men than in women, though in my own experience the ratio is not so marked as it seems to be elsewhere. The general ratio of cancer of the stomach is one case in women to two or three cases in men. In the early diagnosis of cancer of the stomach we should be particularly suspicious of indigestion which begins in any one thirty-five or more years of age, whose stomach has previously given no symptoms. The unfortunate feature about stomach symptoms is that so much of the stomach is really "silent". Lesions along the greater curvature or in the cardiac portion of the stomach will give no symptoms whatever unless there is perforation or obstruction or bleeding. This seems to account for the 70 per cent of cancers of the stomach that appear to arise rather quickly and are advanced within a short time after the first few

symptoms have appeared. It is highly probable that this type originates from some pathologic tissue, either an ulcer, an adenoma, or a papilloma, that has been present in the cardiac portion or along the greater curvature of the stomach for years and suddenly degenerated into cancer. It is well known among roentgenologists that any ulcer of the stomach that can be demonstrated along the greater curvature is already cancerous. In the smaller percentage, possibly 25 or 30 per cent, of cases the symptoms have existed for a long time. In these cases it seems probable that the lesion has been present in the more sensitive areas of the stomach, along the lesser curvature or in the pylorus where obstruction has occurred early.

Physiologists have shown that peristalsis originates along the lesser curvature, particularly near the esophagus, and proceeds toward the pylorus. Any lesion in this region will give symptoms, whether it be benign or malignant, but a benign lesion such as an ulcer is more likely to give early symptoms than will a malignant lesion in the very early stages, because it is well known that there is little pain in cancer in the beginning. After the cancer has advanced sufficiently far to involve much of the stomach, to interfere with peristalsis and to involve the peritoneum, pain of a gnawing, almost constant, character is common.

Careful necropsies have shown that not more than 50 per cent of cancers of the stomach show a necrotic ulcer with elevated margins as they are usually pictured. It is doubtless for this reason that marked hemorrhage from cancer of the stomach is so infrequent. Saltzstein and Sandweiss place it at less than 2 per cent (1.4%), whereas hemorrhage from gastric or duodenal ulcer occurs in 18 to 20 per cent of the patients.

There is no pathognomonic symptom of cancer of the stomach. About one-fourth to one-third of the cases have had protracted symptoms for many months or years, but in about 70 per cent the symptoms have existed for only a short time before the growth appears to be fairly well advanced. After the growth has extended there is frequently rather constant pain in the epigastric region beneath the sternum. The pain

may be constant, but it is often aggravated by food. In some instances there is relief after food is taken. In the later stages of the disease, which should not be awaited before a diagnosis is made, there is cachexia and sometimes enlargement of Virchow's glands in the root of the left neck. If the patient is thin, not infrequently a mass can be palpated in comparatively early stages, but usually the growth is rather advanced before a palpable mass is present. Much depends upon the location of the cancer. If it is in the region of the cardia it is usually not palpable until it is very far advanced. In the pyloric portion of the stomach, however, it can be frequently palpated in the early stages if the abdominal wall is well relaxed.

The analysis of the gastric contents usually shows diminished hydrochloric acid or a complete absence of hydrochloric acid. Blood is occasionally found, but as has been said many cancers of the stomach have no open ulcers, and even in the open ulcer type bleeding is not a prominent symptom as it is in peptic ulcer. The absence of hydrochloric acid is more common in elderly people, and may of itself be of no great significance. It is frequently found associated with gall-bladder disease. On the other hand, in the early stages of cancer hydrochloric acid may not only be present but may be present in about a normal amount. W. J. M. Scott and others have reported patients with comparatively early cancer in whom the hydrochloric acid was higher than normal.

Given a patient, particularly a man—though in my own experience it appears that the ratio of men to women is almost equal—who is thirty-five years of age or over, having symptoms of indigestion, who has formerly not had any stomach trouble, we should always be suspicious of cancer. An effort should be made to find the cause of his indigestion, and if it is obviously some condition such as indiscretion of diet, worry or nephritis, or some other cause, the condition which causes the indigestion should be treated. If, however, the patient is not relieved in a few weeks, a gastro-intestinal x-ray examination should be made by one who is competent to do this. The fluoroscopic examination is often more valuable than the x-ray plates. If a lesion of

the stomach is found and it seems probable that it is malignant, an operation should be done at once, preferably a partial gastrectomy. If the lesion is an ulcer and is along the greater curvature, it should be assumed that it is malignant because roentgenologists have taught us that all ulcers that can be demonstrated on the greater curvature are malignant. If it is an ulcer on the lesser curvature or elsewhere, it may be treated for a few weeks medically, but if it does not improve clinically and by x-ray, the patient should be operated upon, and preferably a partial gastrectomy should be done.

If a patient over thirty-five years of age has been having symptoms of indigestion for years, such as abdominal discomfort, belching, bloating with gas, nausea, anorexia, vomiting, regurgitation of gastric contents, waterbrash or heartburn, a thorough roentgenologic examination should be made and such treatment as may be indicated by the diagnosis should be instituted.

A partial gastrectomy if carefully performed carries but little danger over a gastroenterostomy. If the lesion is an ulcer, a partial gastrectomy would be a satisfactory treatment. If it happens to be early cancer—and this cannot always be differentiated from ulcer in the early stages—a gastroenterostomy would do but little good. A gastroenterostomy has but little place in the surgery of gastric cancer. There are possibly a few cases where marked obstruction or extensive metastasis is present, in which it may be indicated, but they are rare exceptions. Even when there are small metastases outside of the stomach, if the cancer is in the pyloric region and fairly accessible a partial gastrectomy is preferable to gastroenterostomy.

PEPTIC ULCER AND GASTRIC CANCER

Every one who has studied this subject acknowledges that in at least some cases gastric cancer originates from a peptic ulcer, though the ratio of this relationship is much disputed. Some lay down the rule that in order to show that cancer begins from a peptic ulcer the cancer must be found solely on the margin of the ulcer and not in the base. This, however, is not always an accurate classification, because there have been some instances of a stomach lesion in which the gastric symptoms

were very definite for five years or more and in which at operation the ulcer was found comparatively small with a cancer not only in the margin of the ulcer but in the base. It seems hardly probable that such a lesion could have been cancerous for five years. Then, too, when a cancer is fairly well advanced it has doubtless obliterated all marks of its beginning. That some cancers of the stomach do begin from peptic ulcers of the stomach is unquestionably true, and this fact should be borne in mind. Thus, Dr. William Gerry Morgan, a medical gastro-enterologist of Washington, says: "Although gastric ulcers may and often do heal spontaneously with or without treatment, nevertheless from my own experience I am inclined to view them always as surgical cases from the outset. I take this view because a certain proportion of ulcers of the stomach which in the beginning are diagnosed as benign later prove to be carcinomatous. As yet we have no means of positively differentiating, in the early stages, the benign and the malignant types of ulceration of the stomach."

A typical case of cancer developing from peptic ulcer which I have reported elsewhere (*J. A. M. A.* 92: 1813-1816, June 1, 1929), was that of Mrs. L. E. H., housewife, age 70 years, who had had "stomach trouble" at intervals for about fifteen years, with dull pain in the lower epigastrium without relation to meals. There was some nausea but no vomiting until a week before admission to the hospital. There had been recently a slight loss of weight. There was no history of hematemesis or melena.

A roentgenogram of the stomach about a year before admission to the hospital did not show a definite lesion. The symptoms continued, however, and within the last few months before admission to the hospital they became worse. One week before admission a roentgenologic examination showed a marked defect in the pyloric end of the stomach, and repetition of the examination confirmed this; there appeared to be a partial obstruction extending from near the left boundary of the pyloric antrum to within the pyloric canal. There was very little free hydrochloric acid in the gastric juice. The patient was given hydrochloric acid for several days before operation, in

order to decrease the bacterial growth in the stomach by adding an antiseptic that is normally found in the gastric juice. This is an important pre-operative preparation which we use routinely in gastric cancer.

I did a partial gastrectomy under local anesthesia, using a modification of the Billroth I method described later. The patient made a satisfactory recovery from the operation, and has been in good health since that time (more than four years).

The specimen consisted of the pyloric portion of the stomach and measured 7 cm. along the lesser curvature and 13 cm. along the greater curvature. On the pyloric end there was a small cuff of duodenum. There was a lesion in the lesser curvature toward the posterior wall, about half-way between the pyloric and cardiac ends of the specimen. It infiltrated slightly the surrounding tissues, was oblong and superficially ulcerated, and measured 2 cm. in its longest diameter. It appeared to be an old ulcerated lesion with some inflammatory deposit but with a possibility of early malignancy. The remainder of the specimen of the stomach seemed normal. The lesion was not prominent, though it could be easily recognized on inspection and palpation of the stomach from without. The extensive roentgenologic defect was obviously due to spasm. It seems probable that when the roentgenologic examination was made a year before there was very little spasm and the lesion, though present, was inconspicuous. With an exacerbation of the inflammation around the lesion, the spasm was great and produced for a time conspicuous partial obstruction.

Histologic examination of the lesion showed in most of the slides the typical appearance of gastric ulcer. The excavation was not deep. At the base of the ulcer was leukocytic infiltration and connective tissue without any evidence of cancer. At the margins of the ulcer the gastric glands were usually normal; in some places there were hyperplasia and irregularity of the epithelium as though the glands were in the act of repairing. Throughout the sections there were areas of leukocytic infiltration. In one small place in one slide there were two acini that showed the structure of carcinoma. These two acini had the distinctive features of cancer. There were mi-

totic figures; the nuclei were irregular, and the cells were irregularly placed. The nuclei in most cells were large and stained well. The basement membrane was not continuous. That the structure of the two acini was cancerous hardly admits of doubt, and yet around them were normal gastric glands. Though serial sections were not made, other blocks from different portions of the ulcer did not show cancer, which was found in only one slide.

The logical conclusion in this case is that the patient's gastric symptoms for fifteen years were due to a peptic ulcer that only recently was becoming cancerous.

ADVANCED CANCER OF THE STOMACH

While it is always best to operate as early as possible on cancer of the stomach, there are occasional cases in which the disease is of a rather low type of malignancy from its histologic appearance and in which it progresses without marked symptoms until it is quite extensive. Such cases are often distinctly palpable and not infrequently are operable even though they appear to be far advanced.

A case in which there was a palpable mass which had existed for a long time before operation, was that of Mrs. B. H. H., age 53 years, housewife, who entered the hospital complaining of vomiting and "sour stomach". She had noticed a palpable mass in the lower epigastrium for more than a year. Though she had had intermittent gastric discomfort for a long time, the present symptoms began only six weeks before admission, first with indigestion, and later vomiting, often vomiting several times a day. The vomiting usually occurred soon after eating. There was no hematemesis and no pain, but she had a burning sensation shortly before vomiting. She had lost 35 pounds in weight during the six weeks. A gastric analysis showed no free hydrochloric acid. A partial gastrectomy was done. The specimen showed a fairly well advanced carcinoma of the stomach, chiefly along the greater curvature. The patient was in good health for nearly three years, but later died of metastases in the neck and chest. Though the cancer was extensive and had existed for a long time, being palpable for more than a year, its excision prolonged life in comfort for three

years and at an earlier stage would probably have resulted in complete cure.

Benign tumors of the stomach which follow a starting point for cancer of the stomach have received more attention recently. On careful examination these cases are far more frequent than is generally believed. When it is recalled that in the silent area of the stomach these lesions may exist without symptoms for many years, it can be appreciated that they may be a starting point for cancers of the stomach that will give no symptoms until the cancerous invasion is extensive.

TREATMENT OF GASTRIC CANCER

The only treatment for cancer of the stomach is excision. Total gastrectomy is an operation that has occasional indications. Improvement of the technic of total gastrectomy is due largely to two things: the introduction of a tube or catheter through a stab wound in the stomach to draw off accumulated liquid material during the operation, as suggested by Devine; and the suturing of a loop of the jejunum to the posterior surface of the esophagus before it is severed from the stomach, as practiced by Moynihan. These changes have done much to simplify this operation. Undoubtedly there are a few cases in which total gastrectomy is distinctly indicated.

As pointed out by Dr. Margaret Warwick, from 176 necropsies on patients who had died from cancer of the stomach, in 40 cases, or 23 per cent, the growth was still limited to the stomach. Saltzstein and Sandweiss have shown that in only 7.7 per cent was a resection done in their series of deaths from cancer of the stomach, and many of these resections were in the late stages. It is obvious from these facts, and also from the fact that a large percentage of deaths from cancer of the stomach are due to perforation of the cancer which is usually thought to be a peptic ulcer, that many of these cases are operable that had formerly been condemned as hopeless.

Since January 1924, I have been using a modification of the Billroth I operation which in my hands has been quite satisfactory. After resecting the stomach the stump of the stomach is united to the duodenum so that the lesser curvature of the stomach is aligned with the upper border of

the duodenum. The stomach and duodenum are then fixed in position by a posterior row of sutures, the Payr clamps on the stumps of the duodenum and the stomach are removed, and, beginning above, the posterior margins of the stomach and duodenum are sutured together. The duodenum is flared open by an incision along its lower anterior surface for one to one and a half inches, and the suturing is continued. Sometimes when the stomach is not very large an actual end-to-end anastomosis can be made. If this cannot be done, the redundant protrusion of the lower portion of the stomach is turned in by a purse-string suture. The anterior wall of the union is doubly sutured. This operation not only removes the disease but restores as far as possible physiologic function by establishing in its proper relation the important lesser curvature.

When, however, on account of the location of the lesion this modification of the Billroth I is not applicable, a Hofmeister modification of the Billroth II is satisfactory. The Polya operation in which the whole length of the stump of the stomach is united to the side of the jejunum retrocolically makes an unnecessarily large aperture and carries the apex of the jejunal loop higher on the stomach than is desirable. The Hofmeister operation, however, which utilizes only the lower portion of the stump of the stomach, seems better. Here a sufficiently large stoma can be maintained and in extensive resections where the portion of the stomach in which active peristalsis occurs has been removed, the type of continuous pressure exerted by the cardiac area of the stomach makes an alignment of the lesser curvature to the upper border of the duodenum of no particular consequence.

CANCER OF THE COLON

Cancer of the colon is usually not so malignant a type as cancer of the stomach, and it tends to metastasize later, and therefore offers a better opportunity for cure. One of the earlier symptoms of cancer of the colon is irregularity in the bowel movements. A patient who has been usually regular in bowel habits and becomes constipated, then has diarrhea, is often suffering from an early cancer. Tenesmus and

straining at stool are more likely to occur in cancer of the lower colon and rectum. The passage of blood may be due to hemorrhoids and is frequently overlooked, but it is well known that many cases of cancer of the colon and rectum are treated for hemorrhoids while the cancer is developing.

The cancer is usually well developed before pain occurs. Pain and tenderness result from involvement of the peritoneum, due either to extension of the cancer or to the accompanying bacterial inflammation. An x-ray examination is helpful with cancers of the upper sigmoid, but not infrequently in the lower sigmoid the redundancy of the loops will cover the lesion. Because of the irregularity of the colon, and the frequent lack of spasm in an early case, the diagnosis of an early lesion of the colon may not be so accurate by a roentgenologic study as in a cancer of the stomach.

The function of the two sides of the colon is quite different. While these functions merge into each other in the transverse colon, in the right colon the function is absorption, while the left colon is chiefly a reservoir. A cancer in the right colon is usually of a fungating or ulcerating type, and often the early and prominent symptom is anemia. This may be confused with a primary anemia. Formerly it was thought that this was due to a hemolytic toxin from the growth, but now it is known that it is due to the toxic products from the growth which are absorbed by the right colon. Cancer of the left colon and sigmoid is often of the constricting or so-called "napkin-ring" type. Frequently the first symptom is from obstruction, though blood and mucus in the bowel movements usually occur at irregular intervals for some months before obstruction. However, the fungating type of cancer may occasionally be found in the left colon and the constricting obstructive form in the right colon.

That cancer of the colon frequently starts from a benign lesion is obvious. In the lower sigmoid and upper rectum that can be examined with the proctoscope, this beginning point is not infrequently demonstrated. A patient of mine, Mrs. C. C. S., aged 67 years, housewife, had pain and a palpable mass in the left side of the abdomen beginning three months before operation. She was quite fat. There was no

history of diarrhea or passage of blood. The patient had lost about twenty-five pounds in weight. At operation a cancer of the transverse colon was removed and the specimen showed that in the neighborhood of a cancer there were several adenomas which at first glance might have been thought to be metastases. On examination, however, they proved to be adenomas with marked hyperplasia of the cells. Apparently the cancer began in one of these adenomas.

TREATMENT OF CANCER OF THE COLON

As in gastric cancer, the only treatment for cancer of the colon is surgical excision. If the growth is in the right colon it should be operated upon probably in two stages. If the growth is advanced, adherent to the tissues, or the mesentery is short, it is safer to divide the ileum in its lower portion, anastomose it to the transverse colon end-to-side, reinforcing the union by suturing omentum over it, close the stump of the ileum, and in about two weeks excise the right colon and the stump of the ileum. This excision can then be done with greater safety as the bowel in this manner is opened only at its junction with the transverse colon and this is done with the cautery. If, however, the growth is not adherent and the mesentery is rather long, it may be possible to do the resection in one stage.

If the cancer is in the transverse or the left colon it should be removed in at least a three-stage operation. First, a complete right colostomy is done through a muscle-splitting incision. In this way the patient's diet need not be greatly restricted. If a colostomy in the ascending colon is done and a glass rod is inserted under the loop, the remaining portion of the large bowel is given a complete rest. It may be irrigated several times a day with salt solution. The diet can be well balanced; the bacteria in the remaining portion of the colon can be reduced to a minimum by depriving them of feces. After about two weeks the resection is done. If the patient is fat, and the growth is adherent, a modified Mikulicz operation is performed, bringing up the cancerous loop after severing the mesentery, approximating by sutures and clamping its two ends of the loop and severing the loop with the cautery. The tissues down to the root of the mesentery may be drained for

a few days. Then the drainage is removed and a few days after this the stumps of the colon are opened. As the colostomy shunts all of the fecal matter from the site of the resection, the anastomosis can be closed more leisurely by inserting a clamp that crushes the spur that separates the ends and a few days later suturing the ends of the bowel. If, however, the growth is easily accessible, a resection with preferably an end-to-end union is done. It is important to secure accurate approximation of the ends of the bowel wall. When the bowel has been given complete rest, the dangers of infection are not nearly so great as they would be if the colostomy had not been complete, and remain about the same as in the upper small intestine. The ends of the bowel are thoroughly cleansed after isolating them and are accurately united with a continuous suture of linen or silk. Around this is placed a series of mattress sutures of 00 tanned catgut. The ends are left long, carried through the adjacent peritoneal covered fat, and tied. About two weeks later the colostomy is easily closed, first removing the glass rod a few days before it is closed, then replacing the mucosa and holding it with sutures even under some tension. The wound is disinfected, the peritoneum opened, and the bowel is freed. Interrupted mattress sutures are placed, preferably of 00 tanned catgut. As the wound has been a muscle-splitting one, the muscles can be easily brought together. Usually there is some suppuration, but rarely any fecal leakage.

Cancer of the rectum is, of course, a different story and is not properly included in this lecture, but it seems unnecessary to make a right colostomy for cancer in which the rectum must be extirpated.

Dr. Fred Rankin of Lexington, formerly of the Mayo Clinic, has added much to the surgery of the colon. The administration of vaccine and the intraperitoneal injections of glucose for some days before the resection doubtless add something to the safety from peritonitis.

Pyelitis in the Infant—The prognosis of pyelitis in the infant and older child is usually favorable. Relapses, however, are not uncommon. In general, the mortality rate depends on the general nutritional condition of the patient, the complicating disease, and the presence of obstruction in the urinary tract.—*Elterich, Penn. M. J., April 1933.*

DIFFERENTIAL DIAGNOSIS OF ABDOMINAL TUMORS*

FRANK K. BOLAND, M. D.
Atlanta, Ga.

No differential diagnosis in medicine is more important, and sometimes more difficult than that of abdominal tumors. The importance often lies in determining whether the mass should be treated medically or surgically.

Two kinds of swelling occur in the lower abdomen which are neither medical or surgical, but physiologic. One of these is the commonest tumor that appears in the abdomen, namely, pregnancy, and the other is a much less frequent condition, but one which has deceived good doctors, namely, a distended urinary bladder. I once attended a clinic where a surgeon was posted to remove a large ovarian cyst. He first had the patient placed in the lithotomy position, and remarked, "Before opening the abdomen in a case of this kind, I always catheterize the bladder." As he did so, seventy-two ounces of urine were removed, and the tumor disappeared.

To differentiate pregnancy from a fibroid tumor of the uterus is not always easy, and able surgeons and obstetricians have been guilty of mistaking one condition for the other. I know a prominent professor of obstetrics who at least on two occasions has opened the abdomen to remove a fibroid tumor, and found the patient to be pregnant. In a patient in whom the well-known signs of pregnancy are not typical, a soft edematous fibroid, or a fibroid undergoing some kind of softening degeneration may create a problem in diagnosis. Not long ago I removed one of these soft fibroids, and although the patient's history did not suggest pregnancy I was uncomfortable until I had split the tumor and found no fetus. It is recognized that pregnancy and tumor may coexist, in which case hysterectomy usually is indicated. Careful study and examination usually differentiate ovarian cyst from uterine fibroma, but sometimes the correct diagnosis is not made until the abdomen is opened.

Swelling in the abdominal wall may be mistaken for an intra-abdominal growth.

I have found such a mass to be an abscess of the abdominal wall. Sometimes it is impossible, without an incision, to distinguish a fatty tumor, or some other benign neoplasm, of the abdominal wall, from a small omental hernia, or from a mass of omentum which has become adherent to the parietal peritoneum and almost incorporated in the wall of the abdomen.

There should be no trouble in recognizing such an everyday condition as gaseous distention of the abdomen. It may become important to tell whether there is free gas in the peritoneal cavity. The old sign of diminished or absent liver dullness may be helpful, but often a distended transverse colon may obscure liver dullness. The roentgen-ray may confirm the diagnosis of free gas in the peritoneal cavity. Sometimes a lateral view is better for this purpose than an antero-posterior exposure. A lateral view brings out the full curve of the diaphragm, and thus distinguishes between gas below and air above the diaphragm.

Recently Cofer and Phillips¹ reported two cases of duodenal hernia which occurred in the Emory University Division of the Grady Hospital, Atlanta. Both of these patients presented abdominal tumors difficult of diagnosis. The first case was diagnosed as acute intestinal obstruction of unknown origin, was operated upon, and recovered. The second patient entered the hospital only three months later, with a similar history and similar abdominal tumor. With the picture of the first case still fresh in the mind, the second case was correctly diagnosed duodenal hernia. Operation confirmed the diagnosis, but the second patient failed to recover. Both patients had been in normal health until a few hours before entering the hospital. They were seized with sudden violent abdominal pain, nausea and vomiting, with almost simultaneous appearance of a large abdominal swelling. In each case the tumor was smooth and firm, and filled the lower abdomen, extending 4 cm. above the umbilicus. There was a dull note upon percussion. Laparotomy exposed a tumor mass resembling an ovarian cyst, with omentum stretched over it. The sac was incised, and all the small intestines were found within.

*Read before the Association in annual session, Montgomery, April 20, 1933.

1. Cofer, O. S. and Phillips, H. S.: Duodenal Hernia, *Annals of Surgery*, Dec. 1931, pp. 1088-93.

Reduction was accomplished by unfolding the root of the mesentery, upon which the hernial orifice was found to be at the duodeno-jejunal junction.

May I digress a moment to point out the danger of preconceived ideas in diagnosis. In the cases just recited the recognition of a second duodenal hernia following so soon on the first one promptly suggested the diagnosis of this rare condition. If the first patient had not been seen so recently correct diagnosis of the second case would not have been so easy. Several years ago I made a correct diagnosis of ovarian cyst twisted on its pedicle in a young girl whom another doctor suspected of being pregnant. The next week I had another patient with an ovarian cyst twisted on its pedicle and made the right diagnosis almost without examining the patient. This success led me to believe that I was pretty smart, and it also led to my downfall. The next week a doctor from out of town called me, and after he described his case to me I said, "Your patient has an ovarian cyst twisted on its pedicle." After examining the patient in the country I held to the same diagnosis. The patient was operated upon at home, and after opening the abdomen the pelvis was found to be normal, and the mass was a hydronephrotic kidney, which had become twisted upon the ureter, causing Dietl's crisis. Since the kidney was a mere shell, without function, it was removed through the peritoneal cavity, with good results.

Ascites may be responsible for the abdominal swelling. The presence of fluid may be recognized, but if the quantity is large it may be difficult to tell whether or not the fluid is encysted. Usually small amounts of fluid are shown by dullness in the flanks, and resonance in front. The commonest encysted mass is an ovarian cyst. Generally in measuring the abdomen the greatest circumference is below the umbilicus in an ovarian cyst, and above the umbilicus in ascites. Of course there always may be both encysted fluid and free fluid.

The necessity of differentiating general obesity from ascites may arise. The mesentery, omentum and abdominal wall may be so loaded with fat that satisfactory examination is impossible. With obesity the

umbilicus remains a deep pit; with ascites it is pushed forward to become flush with the surface, or even to protrude. With ascites the umbilicus becomes stretched laterally to form a transverse slit.

Large abdominal cysts occasionally may simulate ascites, hydronephrosis, pancreatic, retroperitoneal and hydatid cysts. Such tumors do not as a rule cause uniform abdominal distention, and may be differentiated from ascites by their position. Aspirating fluid from the abdomen for diagnosis is not a procedure to be advocated casually. Occasionally it is indicated, and may be valuable in recognizing a pancreatic cyst, with the presence of peptonizing and starch-digesting ferments in the fluid. If the fluid is bloody, and contains multilocular endothelial cells, or cells with atypical mitotic figures, carcinoma is indicated.

Fecal accumulations usually are distinguished by their soft, plastic feel. I recall a palpable fecal mass, however, of stony hardness, a spinous process of which perforated the gut and caused peritonitis. The distended coils of large intestine, the age of the patient, and, if need be, roentgenology, should establish the diagnosis of Hirschsprung's disease.

General enlargement of the abdomen may occur in malignant disease of the peritoneum, due in part to the growth of numerous secondary nodules, and in part to the concomitant ascites. The symptoms at first may be vague; loss of weight, strength and appetite, with indefinite abdominal disorders. The abdomen enlarges, and if ascites is not marked the secondary deposits can be felt obscurely through the belly-wall. The symptoms become more pronounced. If a primary tumor can be made out in the chest, abdomen, pelvis, breast or testes, the proper diagnosis should be suggested, especially if enlarged glands are found in the groins or axillae.

I recently had a case of this kind in which a woman of forty-two apparently had a simple myoma of the uterus. Her general condition was good. There was no weakness, loss of weight or anemia, and no ascites, or other masses felt besides the enlarged hard uterus. Operation was advised, but was postponed for five weeks. When the patient returned she was very weak and anemic, had lost ten pounds in

weight, and other masses and fluid were detected in the abdomen. Exploratory laparotomy revealed general carcinomatosis of all the pelvic organs and the peritoneum.

Tuberculous peritonitis is a comparatively common disease which must be thought of in studying the cause of abdominal swelling. Swelling from this malady may occur in any size or position. The mass may be composed of infiltrated omentum, enlarged tuberculous mesenteric glands, or doughy lumps of adherent intestine. The amount of ascitic fluid varies. If the amount of fluid is great, and the patient is an adult, cirrhosis of the liver may be suspected. The patient's general condition in peritoneal tuberculosis is suggestive. He is thin, anemic, definitely ill, and abdominal pain and tenderness, nausea and constipation are present. Usually the temperature is not high, except in acute cases. Ulceration of the colon may cause diarrhea, with the passage of blood. Tuberculous peritonitis, however, is more apt to be confused with such a condition as appendicitis or intestinal obstruction rather than with abdominal tumor. Occasionally the disease is discovered in an ambulatory patient with indefinite history and symptoms.

Subphrenic abscess may be responsible for swelling in the upper abdomen and be mistaken for tumor. A history of preceding suppurative appendicitis or perforated peptic ulcer should lead one to think of subphrenic abscess in such cases. Often free gas is present, which should be demonstrated by the roentgen-ray.

Considering now swellings of the abdomen in some of its different geographical areas we find in the right hypochondrium the organ which, outside of the female pelvis, presents more tumors than any other viscus in the abdomen, the liver. Riedel's lobe must be differentiated from a floating kidney or enlarged gallbladder. Sometimes visceroptosis may cause the liver to drop and be mistaken for a tumor, especially carcinoma, if wasting and anemia exist. Cancer of the stomach or colon may give a false impression of increase in size of the liver. We have recognized nine cases of syphilis of the stomach at Emory University, but in only one case was a palpable mass present. Tumors of the stomach or transverse colon may move up and down

with respiration, for they are all directly or indirectly attached to the liver, but the movement usually is not so extensive as that of the liver, and a zone of resonance sometimes may be detected between the liver and the mass, or the free edge of the liver may be felt. Thickening of the pylorus, duodenum or gallbladder may be difficult to distinguish from the liver. Occasionally in a patient suspected of gallbladder disease, a mass felt in the location of the gallbladder is thought to be a distended or thickened gallbladder. Such a mass generally turns out to be the liver, although the gallbladder is the seat of the trouble. It is unusual, although not impossible, for the gallbladder to be felt through the abdominal wall. Even a huge gallbladder often is covered by the liver.

Two years ago a negro woman, with an enlargement of the upper abdomen, was admitted to the Emory University Division of Grady Hospital. She was thirty-two years of age, and said the mass had been growing for three years. She was not acutely ill nor in obvious pain. Jaundice was absent. Her thyroid gland was diffusely enlarged, and by roentgen-ray both kidneys were considerably increased in size. Temperature and pulse were normal. The urine was negative, and blood normal in every way, except the red corpuscles were 5,400,000, and the hemoglobin from 90% to 100%. A rounded mass protruded from under the edge of the ribs, and filled the space in the right upper quadrant and the upper two-thirds of the left upper quadrant. The maximal protrusion was in the midline and slightly to the right. As far as palpation and percussion were concerned the tumor appeared to be continuous with the liver, although it did not move with respiration. Both flanks bulged, but there was no evidence of fluid. The spleen was not felt. The tumor was rounded and firm, and its surface slightly irregular but not nodular. It did not extend into the flanks, and the tip of the right kidney was palpable. Over the middle of the swelling an impulse was transmitted from finger to finger. The most unusual finding was a humming musical murmur which was heard over the central area, and which ran through the whole cardiac cycle. The murmur varied with respiration and could be made to disappear by very light

pressure over the umbilicus. There was no expansile pulsation.

This case was studied and discussed in a conference of the hospital staff, and the following diagnoses proposed: pancreatic cyst, polycystic kidney, arteriovenous fistula, congenital cyst of the liver, echinococcus cyst and cavernous hemangioma of the liver. Exploratory laparotomy proved the last diagnosis to be correct. Although no effort was made to remove the growth, the patient's condition is now better, and the mass is smaller. This is a rare abdominal tumor, but we have had a similar one since, although the diagnosis in the second case was not confirmed by operation or autopsy.

Suppuration within the liver, producing cholangitis, multiple or single abscess, must receive careful consideration as the possible cause of an abdominal enlargement. The constitutional signs of suppuration, fever, chills, and leucocytosis should afford a clue to the correct diagnosis, but sometimes such signs are not pronounced, or they may be present with other hepatic lesions. In our experience with fifteen cases of amebic liver abscess the plasmodium usually was not discovered in the stool, but was recovered from the walls of the abscess cavity. As a rule amebic abscess is single, and involves the right lobe of the liver. Multiple abscesses, generally the result of trauma, or of some abdominal infection, such as appendicitis, are not so hard to recognize. We long ago learned that it is not necessary for a patient to live in the tropics to develop amebic, or so-called tropical, hepatic abscess. Roentgen-ray is valuable in confirming the diagnosis of abscess of the liver, but it is surprising how many cases are reported by the roentgenologist as a lesion above the diaphragm instead of below it. Here again the lateral roentgen picture is helpful. Roentgenology clearly portrays elevation of the diaphragm due to enlarged liver. Such elevation usually is higher from abscess than from carcinoma, although the carcinomatous liver may be larger. Abscess may be responsible for an extremely enlarged liver, but seldom as large as that due to carcinoma. One of our cases thought to be liver abscess secondary to rectal abscess turned out to be suppurative cholangitis causing enlarged liver. The bile ducts were dilated and filled with pus, but there

was no pus in the gallbladder and cystic duct.

Cirrhosis of the liver, one of the causes of abdominal tumor, does not seem to be as common in the South as in other parts of the world. Perhaps our liquor is better. In this enlargement at first the liver is not altered in shape, and the surface and edge are smooth. Later, as the fibrous tissue contracts, and the fat is absorbed from the cells which have undergone degeneration, the surface becomes uneven. This unevenness increases until the irregularities are like hob-nails, and can be felt through the belly wall. As the irregularity increases, the discrimination between cirrhosis and cancer of the liver increases in difficulty. However, no irregularity from cirrhosis ever exceeds a small cherry in size, nor does it ever enlarge suddenly. Cancerous nodules are larger and may suddenly grow in size from hemorrhage. A cirrhotic liver usually is not painful, and is accompanied by an enlarged spleen, but here it becomes necessary to distinguish between cirrhosis of the liver and splenic anemia, or Banti's disease.

The dyspepsia and weakness which accompany cirrhosis should be kept in mind. Jaundice is seen in about one-third of the cases, but seldom is as deep as in carcinoma of the liver. Ascites exists in about one-half of the cases. Differentiation between cirrhosis and cancer often presents a perplexing problem. It is said that the conditions may coexist, a comforting observation at times. Syphilis of the liver causing enlargement should not be so difficult to recognize, although the statement of DaCosta cannot be forgotten, when he says, "syphilis of the liver is an able actor and often impersonates with surprising accuracy various other diseases." This form of lues rarely puts the patient to bed, and the irregularities of the liver are much larger than the hobnails of cirrhosis. Jaundice and ascites are not common signs in syphilitic liver.

Secondary cancer is the commonest tumor, and generally the largest tumor of the liver. Ordinarily there will be symptoms of the primary malignant disease, which in ninety per cent of cases is in the periphery of the portal system, but not infrequently symptoms of the primary disease

fail to appear, and the patient may not be conscious of being sick until he has symptoms of hepatic carcinoma. Enlargement of the liver usually can be made out by palpation and percussion. The edge is hard and often irregular. When the secondary nodules are numerous the whole organ feels uneven, knobby and hard, and sometimes the lumps feel umbilicated, an almost pathognomonic sign of cancer. Rapid growth of the tumor, and sudden enlargement of the nodules from hemorrhage also almost positively point to cancer.

Primary hepatic carcinoma is rare. During the past few years three cases have been recognized in our clinic and proven by autopsy. A remarkable case is that of a thirteen-year-old boy, with negative family and personal history until two months before admission, when he received an apparently trivial blow on the abdomen. Three weeks later he began to complain of weakness, headache and abdominal cramps. These symptoms increased in severity, and three weeks before entering the hospital the pain had localized in the right upper quadrant, where he noticed a swelling. He lost weight and strength rapidly. When he was admitted to the hospital the abdomen was distended, and the skin stretched tight with the superficial veins presenting a caput medusa. Continuous with the liver dullness could be palpated a firm smooth mass extending from the fourth interspace anteriorly to the umbilicus medially, and almost to the crest of the ilium in the anterior axillary line. Pressure on the mass caused pain. There was no ascites. The temperature was 101.2, pulse 110 and respiration 34. Blood pressure 130/110. There was a moderate degree of anemia, with 16,000 leucocytes, and 85% polynuclears. The patient became progressively worse, and died two weeks after entering the hospital. Autopsy disclosed a liver weighing 5,000 grams. Microscopically the tumor consisted of masses of closely packed cells with large nuclei and small cytoplasm, apparently a fetal type of malignant liver cell.

The commonest tumor discovered in the epigastrium is cancer of the stomach, and may the day soon come when we can diagnose and treat this hopeless disease before it reaches the stage of a palpable mass! The

recognition in infants of the thickened pylorus due to hyperplastic stenosis should not be difficult. In no place in surgery has the roentgen-ray furnished such valuable assistance as in the study of lesions of the stomach. Cysts of the omentum, single or multiple, occur more frequently than is supposed, and form tumors in the epigastrium.

Swellings derived from the pancreas push forward from the depths of the abdominal cavity, toward the epigastric and the upper part of the umbilical areas, and present themselves as deeply-seated, vaguely-felt masses on palpation. They have the stomach, or stomach and colon, in front of them, and appear to be fixed to the posterior wall. Often such tumors are best made out after the patient is relaxed under an anesthetic. They move little on respiration, and sometimes transmit from the adjacent aorta a non-expansile pulsation. The tumor may be malignant, in which case emaciation, anemia and jaundice are likely to be observed. Courvoisier's law works well: deepening jaundice with a painless distended gallbladder indicates cancer of the head of the pancreas. If the tumor is due to chronic pancreatitis the course of the disease will be slower, and there will be more epigastric tenderness and pain, with clayey stools and perhaps intermittent jaundice. An acutely inflamed pancreas has been only exceptionally palpated before operation.

Cysts of the pancreas at first occupy the lower epigastric or hypochondriac regions, but they may attain an enormous size and completely fill the upper abdomen. Symptoms of chronic pancreatic disease should exist, indigestion, pale bulky stools and glycosuria.

There have been several abdominal tumors in the Grady Hospital described as tumors of the pancreas, but only a few have been proven by operation or autopsy. A colored female, aged 25, presented a swelling in the epigastrium which moved up and down with respiration. On palpation the mass was of firm consistence and nodular, some of the nodules being movable. The mass extended across the upper abdomen, more on the right side than the left, and could be moved from side to side. The fingers could be passed between the left costal border and the tumor, but could not be

passed between the right costal border and the tumor. For this reason one observer thought that the mass was attached to the liver. Percussion note was dull, and no fluid wave was present. The lower border of the tumor was 15 cm. below the costal angle. The patient's principal complaints upon admission were hiccoughs and a choking sensation in the chest, which were made worse by lying on the left side. Temperature, pulse and respiration were normal. All blood and urinary examinations were negative. The patient had lost no weight and suffered no particular pain. The pre-operative diagnosis was multilocular cyst, origin undetermined. Laparotomy disclosed a mass at the lesser curvature of the stomach. An incision was made through the gastro-hepatic omentum, exposing the tumor, which occupied the entire area down to the spinal column. The tumor was a multiple cyst attached to the head of the pancreas. Patient left the hospital improved.

A few years ago I had a patient with a mass in the region of the duodenum, which was thought to be a distended gallbladder, tumor of the duodenum, or chronic dilatation of the duodenum. The patient's symptoms were those of duodenal obstruction. The roentgen-ray did not offer satisfactory evidence, although the diagnosis might have been aided by pyelography. The urine was negative. Laparotomy showed a large polycystic kidney densely adherent to the duodenum. This was the cause of the obstruction.

The principal organ to be considered in the investigation of tumors of the left hypochondrium is of course the spleen. It is of paramount importance to know the cause of an enlarged spleen, from the standpoint of treatment. Splenectomy in Banti's disease has given brilliant results, but the operation is rarely indicated in leukemia and pernicious anemia. Palpation is the best method of detecting an enlarged spleen. The characteristic notches felt in the anterior border of the spleen afford a useful guide. The greatest difficulty arises in distinguishing an enlarged spleen from an enlarged kidney or kidney tumor. Both spleen and kidney may move downward when the patient takes a deep breath, but the spleen, being in closer contact with the

under surface of the diaphragm, usually descends lower than the kidney. The colon may be seen or felt over the anterior surface of a renal tumor, which is never the case with splenic enlargement. Percussion yields a resonant note in front of a kidney mass. Should such resonance be not elicited distention of the colon with air has been proposed, but such a procedure is not devoid of danger. Naturally the study of the urine and blood and pyelography often clarify these conditions.

Ten years ago I saw a middle aged woman who had suddenly developed a tumor in the left hypochondrium and lumbar regions. At the same time she was in shock and presented the general appearance of a patient with a ruptured ectopic pregnancy. The mass did not look like the spleen. It arose from behind the peritoneum. Examination of the urine and blood did not assist in the diagnosis. As the mass increased in size rapidly in a few hours, the patient was treated for shock and an incision was made over the left kidney. The tumor proved to be an hematoma, 18 cm. in diameter, in the fatty capsule of the kidney. The blood was coming from a ruptured vein in a new growth in the lower pole of the kidney. The growth was not more than 3 cm. in diameter. The pathologist's report was spindle-cell sarcoma. Nephrectomy was performed and the patient made a satisfactory recovery. No attempt will be made to discuss the various important causes of splenomegaly. It is interesting to recall that intractable cases of syphilis and malaria producing splenic tumors have been cured only by splenectomy.

In reviewing the etiology of tumors in the central and lower parts of the abdomen intussusception may form a mass which should be recognized by the accompanying symptoms of intestinal obstruction. Intussusception is the commonest cause of obstruction in infants, but it may be present in adults. We have had two cases of intussusception in adults due to fatty tumors of the intestine.

Tumors of the omentum and mesentery must be borne in mind when the swelling is in the neighborhood of the umbilicus. In thin, nervous and excited patients, particularly young women, great pulsation of the aorta can often be felt in the umbilical and

lower epigastric areas, and has led to the wrong diagnosis of aneurysm by medical students and others. A boy, aged 17, had abdominal pain requiring morphia. There was vomiting, obstipation for several weeks, asthenia and loss of weight. When first seen the picture was one of acute intestinal obstruction. The blood and urine were essentially negative. The boy's tonsils had been removed some years previously. The postoperative course had been stormy, with hemorrhage, and he was still thought to have trouble in his tonsils. There were enlarged glands in the neck and axilla, and he complained of considerable pain in the left knee. Examination showed a smooth round mass in the left upper abdomen, which was not felt all the time. Its prominence probably depended upon the amount of gas present. Roentgen-ray showed that the transverse colon filled only faintly with barium. The diagnosis was intestinal obstruction due to an unnamed tumor. Tuberculous peritonitis and intussusception were considered. Laparotomy revealed a mass in the mesentery 28 x 15 cm. in diameter, the transverse colon and other loops of intestine being adherent to it. The patient died three days later. The pathological report was lympho-sarcoma, thought to be secondary to a growth in the tonsils. A gland removed from the axilla showed the same lesion.

In the right lumbar and iliac areas the parts to be considered as the cause of tumors are floating kidney, tumors of the colon and cecum, and diseases of the appendix. Dietl's crisis may simulate acute appendicitis, kidney colic, or as in my case, ovarian cyst twisted on its pedicle. Cancer of the cecum or right colon produces palpable masses which ulcerate and bleed and cause toxic symptoms, but which are not prone to lead to intestinal obstruction. It is difficult to distinguish inflammatory masses in and around the appendix from a malignant growth, especially in older people.

Tumors felt in the left lumbar and iliac regions may be the kidney, carcinoma of the descending colon or sigmoid, and inflammatory masses from abscess or diverticulitis. Cancer here is more apt to cause obstruction than palpable tumor. Diverticulitis is commonest in middle aged men,

and the acute form presents a picture like appendicitis on the left side.

Medicine is still an art as well as a science, and the differential diagnosis of abdominal tumors is accomplished mainly by the intelligent interpretation of a carefully taken history and thorough physical examination, although often laboratory aids are indispensable. It is remarkable how many different diagnoses can be suggested by equally competent observers. Many obscure cases in the Grady Hospital were carefully studied by various members of the staff, and sometimes there were as many different opinions expressed as there were examiners, and sometimes operation or autopsy confirmed the diagnosis of one or more clinicians and often the findings did not agree with anyone's idea. For instance, how could one diagnose correctly a case of this kind? A negro woman came in with a hard smooth mass almost completely filling the middle and lower abdomen and apparently springing from the left lumbar region. All kinds of diagnoses were ventured, especially tumors of the kidney and spleen. Exploratory laparotomy disclosed what seemed to be a tumor containing cartilage and springing from behind the peritoneum, but even with the abdomen opened the exact origin of the mass could not be determined. Autopsy a few days later showed that the tumor was a chondro-sarcoma arising from one of the intervertebral discs. Abdomen, from abdomere, to conceal, is still a good name for the belly.

Obstetric Complications—When a fibroid is discovered late in pregnancy, it should be observed until labor begins. If it appears that the tumor will be retracted upward and out of the pelvis, no interference will probably be necessary. The possibility of rupture of the uterus and arrest of labor must be kept in mind. The greater number of cases fall in this class. Labor is very fortunately successful without complication. Those cases in which the labor is definitely arrested or obstructed must be remedied by a cesarean section. The fibroid then may be removed at the time of delivery, or later, as considered best. Many fibroids undergo atrophy during involution and are scarcely discernible a few months later.—*Massey, Texas State J. Med., April 1933.*

YEAST INFECTIONS*

GROESBECK WALSH
Fairfield, Alabama

PART II

COCCIDIOIDAL GRANULOMA

The California State Department of Health published a special bulletin, No. 57, in 1931,¹⁶ giving a most interesting historical resume of the disease known as "coccidioidal granuloma"; also an excellent description of our knowledge of the disease at the present time. The information is contained in a symposium to which Dr. Emmet Rixford, Dr. Ernest C. Dickson, and M. Dorthy Beck all contribute. From this bulletin the following narrative is taken.

It was under Dr. Rixford's care that the first case of coccidioidal granuloma appeared in the City and County Hospital in San Francisco in 1893. The man's symptoms had been going on for a year before his admission to the hospital, and he had developed an ulcer on the back of his neck about the size of the palm of one's hand. All ordinary methods of treatment had failed to heal this ulcer; and the pus being examined, large quantities of spherical organisms were discovered, with highly refractile capsule, evidently multiplying by endosporulation. The lesion was finally healed by scrubbing with a stiff brush and bichloride of mercury sol. 1/50⁰.

Dr. Rixford exhibited the patient before the San Francisco Medical Society in 1894. At about this time a similar case was discovered under the care of Dr. W. S. Thorne in St. Mary's Hospital. The attention of Dr. Rixford then was called to the fact that a case had been reported in the literature by Wernicks and Posadas of Buenos Aires in the Argentine. Material from this case of Dr. Rixford was sent to Dr. Welch at Johns Hopkins, and it was at Dr. Welch's request that the formal report of the case was published in Johns Hopkins Hospital Reports for 1896, in conjunction with some studies of Dr. Gilchrist.¹⁷

At about the same time the material was sent to Dr. Stiles of Washington, who was unable to identify the organism, but gave it the name *Coccidioides immitis*. As indicative of the severity of the infection, before this patient died—which event took place about two years after diagnosis was made—he had lost one ear, both eyes, was suffering from osteomyelitis of the tibia, suppurative disease of the testicles, and pulmonary lesions suggestive of tuberculosis. On autopsy every organ in this man's body was found to have been invaded by this organism.

It is a very curious historical fact that following this occurrence Dr. Rixford wrote a number of letters to physicians in California, asking their cooperation in reporting cases of this character and offering his assistance in any way he could proffer it. Although we now know these cases must have been occurring at this time, no similar case was reported or mentioned until one appeared in the wards of the University of California Hospital in 1900, six years after the original case was discovered.

The material from this case was sent to Dr. Ophuls, and this fact enabled Dr. Ophuls to determine that the organism grew in culture tubes as mycelia, and was in fact a mold. He suggested the name *Oidium coccidioides* for the parasite, and coccidioidal granuloma for the lesion.

Strange to say, in 1894 Dr. Douglas Montgomery had been supplied with material from the first case, and culturing some of the material upon tubes, the only result was a mold which we now know to be characteristic of the growth of *Coccidioides immitis* on culture media; but Dr. Douglas Montgomery thought the molds were contaminations and threw his cultures away—an unfortunate incident which postponed the identity of the real nature of this organism for nearly six years.

The California State Board of Health made coccidioidal granuloma a reportable disease in 1928, since when the number of cases reported has increased very rapidly, and they are now able to record a total of two hundred eighty-six cases of coccidioidal granuloma reported prior to June 1, 1931. This represents the number they have been able to find all over the world; and, of the two hundred eighty-six cases,

*Second of a series on the subject. The third and last installment will appear in the June number.

*From the Medical Section of the Employees' Hospital, Fairfield.

*Read before the Jefferson County Medical Society, November 7, 1932.

two hundred fifty-four cases, or 89%, have originated in the state of California.

Dickson gives a very interesting description of the symptomatology of coccidioidal granuloma. Meningitis due to this cause, he says, is not uncommon late in the course of general systemic infections; not so common earlier in the disease. It is characterized—when it does occur—by an increased cell count in the spinal fluid, numbering several hundred cells, of which the majority are lymphocytes. The disease appears in most instances as a primary pulmonary infection. There is nothing characteristic in the fever curve, and nothing particularly characteristic in the roentgenologic findings. In contradistinction to torulosis, he states that no instance of the demonstration of the fungus has been made in cerebral spinal fluid, nor is there any record of the recovery of the organism from the urine or stool. Blood cultures have occasionally been positive in advanced cases. Dickson is very much inclined to think that the mortality rate is placed too high and is misleading.

The study of the epidemiology of the cases shows that in the California series two hundred eleven males have been affected compared to thirty-eight females; and that it is distinctly a disease of active adult life, the decade which gives the greatest number of cases being twenty-five to thirty-five. Of the cases examined forty-six were found to be engaged in work which involved contact with soil; sixty-seven with fruits, vegetables and cotton; twenty-seven were general laborers; nineteen worked with animals, as ranchers, teamsters, milkers, and blacksmiths. The list of infected individuals contained one veterinarian, one dentist, and strange to say, four porters in Pullman cars.

Cases of this disease have been reported, of course, from other states; and Pulford and Larson call attention to the fact that the first case reported east of the Mississippi River was that reported by Lynch in the Southern Medical Journal, April, 1920. In the discussion created by the paper of Pulford and Larson¹⁸, Dr. Ophuls, who did so much work with this parasite, said that all the evidence pointed toward the fact that the primary infection was in the lungs and that it was probably due to spores

which had become mixed with dust in the extremely dry months of the year and this mixture had been inhaled to originate the infection. He also called attention to the fact that lesions of coccidioidal granuloma had never been found in the gastro-intestinal tract.

C. C. Tomlinson¹⁹ reports one of the two cases which have occurred in laboratory workers. This developed in an individual who had worked with the *Coccidioides immitis* both in Nebraska and in the University of Pennsylvania. This young man developed a cough of mild character; had three or four attacks of chills and fever; and in May, 1927 he developed a localizing lesion of the left foot, with all the evidences of an acute purulent involvement. The lesion was opened, drained, and cultured, and the *Coccidioides immitis* identified as the parasitic mold. He was treated with x-ray exposures and intravenous injections of tartar emetic for a period of months. Terrible reactions followed the medication, but it was persisted in nevertheless, and a cure apparently resulted.

A most interesting paper is that by Carter²⁰. This paper contains an excellent review of the whole subject and a very interesting discussion of the roentgenologic findings. He describes the organism as a spherule 15 to 40 microns in diameter, although as a matter of fact it has occurred up to 85 microns in diameter. It develops inside the body solely through spores and it takes ten days or more for the spores to develop and cause symptoms. He believes also that the primary infections take place through the respiratory tract, although infections of the skin have been known to occur from small wounds. In the case reported by Zeisler,¹² the primary infection occurred in the skin of the nose, with many resulting dermatological lesions scattered all over the body. Carter is of the opinion that the early lung symptoms may subside and may be lost sight of and indeed entirely forgotten before the other disseminated lesions make their appearance.

He reviews the large number of substances used in treatment, some of which might be listed: iodides; intravenous administration of thymol; mercurochrome; various dyes; intravenous and intramuscular medication; heavy metals, such as col-

loid lead and colloidal copper; potassium and antimony tartrate; x-ray; radium;—to which may be added typhoid vaccine; protein shock therapy; surgical measures; sodium iodide, intravenously; all the arsphenamine preparations, and bismuth.

Carter²⁰ says that the frequency with which the *Coccidioides immitis* is found in the bones and joints has brought a majority of these cases to x-ray study. The bone lesion is predominantly but not purely destructive; and simulates very closely tuberculosis and blastomycosis. In his series the single bone most frequently affected was the rib. The next was the tuberosity of the tibia. He says that suspicions should be raised in every instance in which the bony involvements occur at points of prominence, such as the poles of the patella, the acromion or coracoid processes or angles of the scapulae, olecranon, or styloid processes of the ulna, styloid process of the radius, condyles of the humerus, extremities of the clavicles, and in the malleoli of the ankle joint. He says that one distinguishing feature about coccidioidal granuloma is that it is more frequently multiple than tuberculosis; that tuberculosis is predominantly a disease of early life, and coccidioidal granuloma of adult life. In his series of thirty-seven cases which were roentgenographed, all but one showed involvement. Miliary lesions of the chest were present in approximately one-half. Definite mediastinal mass was evident in one-half. Four developed effusion or empyema. The lesions in the chest, he says, were almost indistinguishable from tuberculosis and blastomycosis. A diagnosis was made evident most frequently by some extrapulmonary lesion, such as abscess, or bone involvement somewhere else in the body.

In the discussion which followed the reading of Dr. Carter's paper, Dr. Pancoast, who was present, described a case which he had seen in Philadelphia. Slides were made of the lesions following a biopsy, and Pancoast stated as follows: "The small, rounded, highly refractile bodies in hyperplastic tissues made one almost believe there must be some parasitic cause of cancer." This boy, from whom a specimen was taken from the glands of the neck, died a few months afterwards.

Dr. W. Edward Chamberlain of San Francisco, in the course of the discussion stated he believed the disease did not have as high a mortality rate as was generally supposed. He quoted two cases, one occurring in a teamster in the San Joaquin Valley—primarily pulmonary—who recovered completely, not only clinically but from an x-ray standpoint. The second case occurred in a medical student at Stanford University, who was working with the *Coccidioides immitis*. He, unfortunately, removed the top of an old culture tube, and it is believed that the patient was infected from the fragments of mold which floated into the air. Cultures, as well as smears, were positive; and x-ray showed what was believed at the time to be a rapidly advancing pulmonary infection. This boy, whom they all expected to die, made a complete recovery; and for more than eight months they have been unable to find any signs of the disease, either roentgenologically or clinically.

We feel from these discussions and other cases which have been mentioned that the number of people who recover from coccidioidal granuloma is probably much larger than that generally supposed. We are well aware of the fact that this disease is insidious, treacherous and sometimes breaks out months after all evidence of its existence has apparently disappeared; but Dickson in his contribution calls attention to the fact that in California there are at least three proven cases and five or six suspected cases in which the progression after pulmonary infection has been upward instead of downward, and who went on apparently to complete recovery. One of the three cases mentioned has been without any evidence of disease for a period of several years, and another one for eighteen months. Although difficult to prove, it is probably true that cases of this sort are much more common than is generally supposed.

In summarizing the disease from the epidemiologic standpoint, the Health Department of the State of California comments as follows:

1. Coccidioidal granuloma is a disease of both man and animal.
2. The infection has been demonstrated in 20 animals, 286 human beings to date.

3. Geographically, the records show a concentration in central and southern California.
4. The majority have occurred in males between 25 and 55 years of age.
5. The highest percentage of cases falls in the agricultural class, involving soil and its products.
6. The impression is that infection in both man and animals is probably contracted in inhalation and there is evidence that humans are infected through the skin as the result of injuries.
7. No man-to-man, animal-to-animal, or animal-to-man transmission has ever been observed.
8. Soil and vegetation suggest the most probable source of infection."

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Vincent's Infection—In the treatment of Vincent's infection the general consensus of opinion seems to be in favor of the employment of remedial agents which act promptly and with certainty. The organisms of Vincent's infection are obligate anaerobes and, therefore, cannot exist in the presence of oxygen; thus any preparation which supplies oxygen to the tissues acts to restrain their development. Solution of hydrogen peroxide is well suited for this purpose. Sodium perborate, advocated by Bloodgood and others, is also of great value. Sodium perborate in solution has been recommended by certain writers, but in that form its oxygenating effect is quickly lost and its inhibitory action on the organisms of Vincent's disease is probably due to its alkalinity alone, as pointed out by Mauldin. Hall and Thomas advocate both local and systemic treatment in combination as the best form of therapy. Butler recommends solution of

hexylresorcinol as a local application, but we have found this solution to be quite painful where there is much exposed dentin. Local application of chromic acid, 5 per cent aqueous solution, is frequently valuable.

Various medicinal dyes have been used, but the objection to them is the danger of causing permanent discoloration of the teeth. Frank advocated the use of tincture of iodine for its action against the fusiform bacillus but it is too escharotic, and for this reason, Lugol's solution, one-half strength, is preferable. Colloidal iodine solution is less escharotic than either of the above and is apparently just as effective. Kolmer discredits iodine as a spirocheticide, but its action against the fusiform bacillus makes it valuable. It is quite surprising the number of writers who advise the application of drugs in pure glycerin or in dextrose solutions when it is well known that such solutions precipitate an attack of pain when brought into contact with the sensitive structures at the necks of the teeth. In the tonsillar region such solutions may be used with impunity, but the application of irritants to sensitive tooth structures made more sensitive by recent inflammation is not conducive to that feeling of good will which should exist between the physician and patient. The destruction resulting from Vincent's infection is permanent and the tissues are not regenerated in any degree; therefore this sensitiveness will persist until measures are adopted to eradicate it.

There is some division of opinion concerning the advisability of using arsenical spirocheticides intravenously, but if the patient is in condition to withstand arsenical therapy, such preparations act as well or better than anything else in overcoming the infection. Ehrlich, Gerber, Sebenq, Mikel and many others, have recommended arsphenamine in the treatment of fusospirillary affections of the mouth. The occasional fatalities which have resulted from salvarsan and the instances in which Vincent's infection has developed during active antiluetic treatment are advanced as arguments against its use. The organisms of Vincent's disease apparently develop a tolerance to arsenic, and arsenicals become ineffective.

Mechanical cleansing is one of the most satisfactory maneuvers in the local treatment of Vincent's infection, as by this means all necrotic material is removed before the medicament is applied to the ulcerated area. Gentle oozing of blood and serum is produced, after which the selected medicament is applied in such manner that its action will not be impeded by the intervening necrotic membrane.—*Gill, Texas State J. Med., May 1933.*

THE JOURNAL

OF THE

Medical Association of the State of Alabama

Editor-In-Chief

FRED W. WILKERSONMontgomery

Associate Editors

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DOUGLAS L. CANNONMontgomery

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent.

Office of Publication

519 Dexter Avenue.....Montgomery, Ala

Subscription Price.....\$3.00 Per Year

May 1933

OUR NEW PRESIDENT

By an almost unanimous vote, the Association saw fit to select as its leader for the ensuing year Dr. James R. Garber, of Birmingham. Born in Pueblo, Colorado, in 1889; receiving his high school training in Demopolis and later the academic degree of A. B. from Spring Hill College, Alabama, he graduated in medicine in 1913 from the Jefferson Medical College in Philadelphia. After graduation in medicine, he pursued special work in obstetrics at Johns Hopkins and since that time has practiced his chosen specialty in the city of Birmingham.

While possessing, by nature, a mind of scientific and scholarly bent, and while limiting his professional activities to a particular field of medicine, the Association need have no fear of a narrow and myopic approach on his part to the economic and sociologic problems which should claim its attention during the coming year. Rather to the contrary; his previous activities and interests point to the fact that the Association may confidently expect an exceptional display of zeal and effort, tempered by lofty and professional ideals.

The coming Association year unquestionably offers exceptional opportunity for sane



JAMES R. GARBER, Birmingham
President 1933-1934

and wise leadership, not only on the part of our President, but also on the part of all loyal members. Single-handed he can hope to accomplish but little; fortified and bolstered by the efforts of a united profession he can, and will, accomplish much.

ACTIVITY IN TUBERCULOSIS

Whenever a diagnosis of tuberculosis is made, whether it be of latent tuberculosis—that is, tuberculosis unaccompanied by symptoms and physical signs, or of manifest tuberculosis (which is to say tuberculosis that is accompanied and disclosed by symptoms and signs), the question at once arises, Are we dealing with an active and hence extensible process or an inactive, inextensible, closed process? Likewise, when treatment has been instituted,—that is, the lung has been in some degree immobilized by bed rest or surgical collapse, the physician is concerned to know whether the treatment has accomplished its purpose, has rendered the lesion inextensible by the establishment of sufficiently complete and

compact fibrosis and hence may be discontinued.

So it is that at every stage throughout the course of a tuberculous process, the question of activity thrusts itself upon the physician. McPhedran reviews this question of activity as follows:

"A generation ago the presence of rales was for many physicians the sufficient and conclusive evidence of active tuberculosis.

Physical signs, including rales, had to be discarded as signs of activity because they usually lag far behind the invasion or development of fresh infiltration and may persist for months or years over anatomically stable and apparently cured lesions.

Elevation of temperature and of pulse, the signs on which is based the current generally accepted conception of activity, are dependable only in that they usually indicate an acceleration, intensification or extension of the existing disease process. Like rales and symptoms they neither herald the onset nor by their disappearance signalize the termination of progressive infiltration or excavation.

Both in latent and preclinical tuberculosis and during clinical disease, widespread extension and even excavation are commonly recorded radiologically before changes in temperature and pulse occur. These are usually late and essentially secondary effects of the morbid process. When present they occur with no definite, much less proportionate, relation to the intensity, extent or significance of the underlying infiltration and excavation by which tuberculosis compasses the destruction of the lung and eventually of life. . . .

A pulmonary infiltration sufficient in extent to cause fever rarely, if ever, escapes ready recognition by an adequate roentgenogram interpreted with regard to the anatomy of the chest, the pathology of tuberculosis and the properties of the x-rays. But a lesion far advanced in classification may develop without such reflection in temperature or pulse as will warn and so protect the patient from a disastrous disability that only too often evolves to a fatal termination."

The several means by which activity can be recognized may be enumerated as follows:

1. The elicitation of clinical symptoms and physical signs.
2. Sputum examination revealing bacilli or elastic tissue.
3. The serial examination of vital lung capacity (not widely used).
4. The sedimentation test.
5. The monocyte-lymphocyte ratio and white blood cell picture.
6. Serial roentgenograms.

It is, of course, in cases where there are no signs or symptoms that the physician needs guidance most. In these cases the sedimentation test, the determination of the monocyte-lymphocyte ratio and differential leukocyte count and the serial roentgenogram supply means for the determination of activity. Of these three methods McPhedran, after a careful and extensive comparison, regards the serial roentgenogram as the most reliable.

Opie writes:

"The application of roentgenology to the examination of the chest progressed very slowly for a time but now represents the most important advance in diagnosis of pulmonary tuberculosis since Laennec's discovery of auscultation."

This applies to the diagnosis of extensibility (activity) as well as to the diagnosis of the presence of disease, for upon the recognition of the presence and degree of activity depends the physician's estimate of the prognosis in every case and his plan of treatment in order to modify or render more stable that prognosis.

McPhedran concludes his review:

"Serial roentgenograms are the guide to and justification of treatment and the patient's protection, his bill of rights."
McP. and B.

RESOLUTION

(Adopted by the State Board of Censors)

Whereas, In the past the State and County Health Departments, in their zeal for spreading the benefits of preventive medicine as widely and rapidly as possible, may at times have rendered service which could

have been performed equally well by the family physician; and

Whereas, Our attention has been called to it; therefore be it

Resolved, That the State Board of Censors address a letter to the Secretaries of the County Medical Societies requesting that this matter be discussed in their meetings and that any instances of infringement by health departments be reported to the State Board of Health, describing the character of the encroachment, if any, that is being made upon private practice in the various parts of the State, and giving suggestions for correcting such injustices; and be it further

Resolved, That this Board declares itself unqualifiedly opposed to the performance by any health department of any form of medical service which can rightfully and efficiently be carried out by the family physician, except in instances of emergency; and be it further

Resolved, That this Board go on record as pledging itself to do all that is within its power to insure full protection for the rights and respect of the practicing doctors of the State; and be it further

Resolved, That a copy of these resolutions be enclosed with each letter to the County Secretaries, and that it also be published in a conspicuous place and type in the Journal of this Association.

DEPARTMENT OF PUBLIC HEALTH

BUREAU OF ADMINISTRATION

J. N. Baker, M. D.,
State Health Officer in Charge

THE FUTURE OF THE HEALTH DEPARTMENT

Out of the vision, the zeal, and the interests of the medical profession sprang Alabama's Health Department. For a number of years this constituted practically the sole prop upon which it rested, because our people and the Legislature had not sufficiently awakened to the value and need for such service. As appreciation grew in the minds of our citizens as to the benefits to be reaped from it, succeeding legislatures, with singular foresight, endeavored to provide the financial means for its wholesome expansion. In the earlier and formative years of our growth, outside agencies—particularly the Rockefeller Foundation and the Public Health Service—were attracted to Alabama because of the unique public health machinery possessed by us. Consequently both of these agencies contributed materially in the building of a structure, the component parts of which were carefully thought out and tested. The keystone of this structure is the County Health Unit, utilized for the purpose of distributing health service direct to the people, coupled with a strong and capably trained central staff for supervisory and advisory pur-

poses. All authorities in public health work are in accord as to the efficacy of this plan of administration. In Alabama, with county boards of health already created through the various county medical societies, this has proven eminently practicable and workable. Once the public conscience has been sufficiently aroused to the need for such service and local funds provided, little or no difficulty has been experienced in launching health work. The organization for field work has steadily expanded for the reason that our legislature, appreciative of the work, had liberally provided State funds for its partial sustenance, while, at the same time, requiring at least a part of the burden to be borne locally. Until some six months ago, all of the fifty-four organized units continued to carry on, many of them, however, with reduced personnel and budgets. With the State's present financial embarrassment and with marked shrinkages in all local revenues, the ultimate doom of a goodly number of the now organized counties seems inevitable. With this fact staring us in the face, the need becomes more acute for preserving centrally as large a nucleus of trained workers as possible in order to adequately care for emergencies as they may arise. The need, too, of preserving certain of our branch laboratories, located at strategic points, is so patent as not to call for further comment. The more re-

cent activities assumed by the department, such as the venereal disease control program, the chest clinics and oral hygiene, have had to be suspended pending the prospect of receiving further funds.

The task of dismantling now confronting us is not easy and will call for patience and fortitude on the part of all. The immediate problem presenting is one of salvaging and preserving the essentials upon which later may be rebuilt a durable superstructure. No fear is felt on the part of the State Health Officer of the willingness and loyalty of the organized profession in this crisis. Now, as in the beginning, it constitutes its sturdiest prop.

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

THE SUSPENSION OF VENEREAL DISEASE ACTIVITIES

With the discovery during the World War that a considerable percentage of recruits examined were infected with syphilis or gonorrhea, the program against these diseases was given a marked impetus. Here in Alabama the State Department of Health cooperated with the National Government in combating these diseases.

The plan of action included the establishment of a certain number of free clinics in the larger centers of population where indigents could receive treatment. To meet the need in the rest of the State cooperative clinics were established. The cooperative clinicians were all physicians in active practice who agreed to treat semi-indigent patients at reduced rates with the State furnishing the necessary drugs. In addition, any physician could receive supplies for his indigent cases if he was giving his service gratis.

Through this scheme of joint action on the part of official agencies and the medical profession a vast amount of treatment has been administered and many infectious cases have been rendered non-infectious. During 1932, for example, there were reported over 200,000 visits to the various clinics.

The first reduction in appropriations for health work led to the elimination of all

salaries paid clinicians and to the elimination of many of the drugs previously furnished. Certain free clinics ceased to function but physicians were still able to take care of their indigent cases without cost to themselves and the demand for treatment has been met. The more recent curtailment of State funds, however, has made it impossible for the Health Department to furnish any further drugs—at least for the balance of this fiscal year.

This means that the indigent case must go untreated and left to spread infection to others or that the medical profession will be called on to shoulder additional "charity" work.

BUREAU OF SANITATION

G. H. Hazlehurst, Director

CAMP SANITATION*

The actual problems in the sanitation of camps, so far as the laws of health are concerned, are the same as are found in any other community. There are a number of differences, however, when it comes to controlling them.

Permanently settled communities have a natural tendency toward sanitation, not only because the residents recognize the value of mutual health protection, but because there is gradually evolved a respect for the rights and comfort of individual neighbors. Outing camps under organized leadership which remains the same year after year also, as a rule, try to follow sanitary methods. The tourist camp is another problem. The individual camper is a fleeting stranger among strangers, and is an unknown quantity as to his regard for, or disregard of, sanitation.

The tourist camp problem is usually a rushing bunched-up affair. The camps seem to arise almost simultaneously and are scattered to the four winds over the health officer's territory. Each of them, before "Open for Business", requires close attention.

Usually before all the regular tourist camps are inspected to determine their san-

*Credit is given the Ohio State Journal, issue of March 15, 1933, for use, in general, of its article on the same subject, herein revised to meet Alabama conditions.

itary condition, and some revisited to see that necessary defects found in the first investigation have been corrected, the schools have closed, the health officer has received notice that the Boy Scouts, the Girl Scouts, the Campfire Girls, the 4-H Clubs, the Y. W. C. A., the Y. M. C. A., the Kiwanis Clubs and a number of similar organizations have selected camp sites and all want his service immediately. About the same time a thrifty farmer along the main highway suddenly discovers that many (?) dollars have been slipping past him and decides to open a camp in the corner of his orchard. Another person who wants to turn a good grove into a camp follows suit. At most of such camps the health officer finds that the matter of sanitation has been given little, if any, thought. Then comes the task of educating the owner in sanitation. Often it requires considerable time, tact, and patience of the health officer to convince him that a safe, adequate water supply, good drainage for the area, and proper sewage and other waste disposal are essential, not only for the successful operation of a camp but in order that it does not become a menace to its patrons and to the community in which it is located. When such methods fail, it becomes the duty of the health officer to apply available measures in order to obtain the desired results.

Therefore the wise health officer begins early in the season to look over the existing camps and has them put in order before the rush of new camps comes along.

Camp Location

As topographical and underlying geological conditions vary, each camp constitutes an individual problem as to water supply, sewage disposal, malaria control, etc., but as a rule the most desirable sites are those located on high, porous ground, affording free drainage in a direction precluding any chance of pollution of its water supply from the camp itself or outside sources.

Water Supply

The most satisfactory water for any camp is that which may be secured from the distributing mains of a public supply; but as few camps are near public works, they must depend on water secured locally from well or spring. Therein arises the

question as to chances of pollution—the entrance of surface drainage below ground, of foreign matter through the top, or the nearness of cesspool, privy or other sources of possible contamination. The health officer usually meets the greatest difficulty in convincing the camp owner that his water supply is a possible menace to health. Ordinarily the owner considers his spring or well “the best water in the State”.

A camp with permanent buildings and equipped with flush closets and other toilet fixtures requires a large amount of water and demands that a suitable system of sewage disposal be provided. Where a municipal sewerage system is not available a disposal system must be installed. Such a system usually consists of sedimentation tank, dosing tank, and subsurface filters with grease traps at the entrance to all sewers outside of the buildings. The majority of camps, however, can have nothing of this kind and must use sanitary pit privies. The main essential of these is their location which should be such as not to cause pollution of water source.

Malaria Control and Screening

The camp site should be normally dry and free from marsh land within its boundaries or contiguous thereto and should be adequately provided with drainage. It should be located away from uncontrolled impounded water, ponds, swamps, and known malarial districts to prevent or aid in the prevention of malaria. Mosquito control measures should be used when needed.

All structures in the camp intended for dwellings, places of occupation by human beings, or in which food is stored or prepared should be satisfactorily screened (mosquito and fly proofed).

Garbage Disposal

Probably the most satisfactory method for rural camps is feeding garbage to swine, naturally at a distance from the camp site.

Covered metal containers should be used for collection and the garbage removed daily. If garbage is buried care should be taken that it does not become a nuisance by putrefaction; for, inasmuch as light and

air are essential for rapid decomposition, buried garbage remains in a putrefactive condition for a long time. It should be buried so deeply under ground as to furnish no breeding place for flies or to be an attraction for vermin or rats.

Milk Supply

The health officer should ascertain if the milk supplied to camps comes from approved sources, and that it is being kept in a sanitary manner if supplied to campers by the camp proprietor.

BUREAU OF LABORATORIES

Catherine R. Mayfield, Acting Director

ACTIVITIES DURING 1932

Vaccine Division

The amounts of the different vaccines produced were as follows:

Typhoid vaccine.....	1,082,382 cc. (432,600 persons)
Diphtheria toxoid.....	326,720 cc. (108,999 persons)
Rabies vaccine.....	121,324 cc. (4,333 treatments)
Tuberculin.....	360 cc.
Silver nitrate ampules.....	47,500
Sterile distilled water, salt solution, etc.....	285,510 cc.

It may be noted that the commercial cost of the products listed above would have been \$102,600.00. The actual cost of production by the Vaccine Division was \$8,500.00.

During the year the vaccine division continued the study of diphtheria toxoid precipitated with alum. The technic of production was perfected and its immunizing action in guinea pigs determined. In cooperation with the Lee County Health Department and the Bureau of Preventable Diseases, the immunization of children with a single injection was undertaken. Of 797 children who received one injection of 1 cc. 96% were Schick negative some two months later. The National Institute of Health has confirmed these results and the studies have been accepted for publication.

Experiments on the growth of vaccine virus in tissue culture were begun with a

view to the production of vaccine by this method for human immunization against smallpox.

Diagnostic Division

The work of the diagnostic division showed a decrease in the total number of specimens from 292,673 in 1931 to 258,461 in 1932. The chief decrease was in routine urinalyses which were abolished in October by resolution of the Board. This effected a reduction in the number of specimens of urine from 34,765 in 1931 to 18,400 in 1932, a drop of 16,365. The low incidence of diphtheria in the State during the year resulted in some 5,000 fewer throat cultures. Specimens of blood for syphilis decreased from 87,955 to 81,065, probably a reflection of the smaller number of patients seen in private practice, as well as the direct result of the closing of the free clinics in November. Blood smears for malaria numbered 11,948 as compared with 16,055 in 1931, a decrease parallel with the decline in the death rate from this disease.

Lithium Media for Isolation of B. typhosus from Feces.—Another research problem, the results of which have had immediate practical application, was the development of media containing lithium chloride for the isolation of typhoid bacilli. This study, which arose incidentally in connection with the general problem of bacterial dissociation, has shown that lithium salts, in concentrations of 0.5%, completely inhibit *B. coli* and related organisms without affecting the growth of *B. typhosus* and the *Salmonella* group. Media containing lithium have been found highly effective for the isolation of these pathogens from feces.

Soil Pollution Studies.—The work of the research laboratory at Andalusia, under the direction of Mrs. E. L. Caldwell, has been productive of important results. The studies of the relation of pit and bored latrines to pollution of ground waters are nearing completion. While additional experimental evidence is being sought on certain phases of this and related problems, the chief conclusions may be summarized as follows:

(1) Bored or pit latrines extending into the ground water are essentially sedimentation or septic tanks of one chamber with the effluent in immediate contact with the

filtration bed. Sedimentation and septic action result in the formation of a scum mat, sludge and intermediate liquid.

(2) The direction of flow from such a latrine is always in the direction of flow of the ground water; no evidence of migration or pollution, either chemical or bacterial, against the current could be detected, even at such very short distances as twelve inches. Furthermore, the zone of pollution is a narrow band which widens for a limited distance and then narrows, due to factors of dilution. The greatest width of the pollution stream from a 15-inch boring was found to be, for chemical pollution, seven feet at a distance of 25 feet, and for bacterial recovery, not more than three feet at a distance of 15 feet.

(3) Rise and fall of the ground water and excessive pumping of test and observation wells lateral to the zone cause oscillations in the stream of pollution, but these are never more than a few feet.

(4) The greatest distance from the latrine at which chemical pollution was detected was 85 feet; for bacterial pollution, the maximum distance at which organisms of the colon-aerogenes group were recovered was 25 feet.

(5) The primary forces which limit recovery of bacterial and chemical pollution are (a) texture of the soil, (b) velocity and direction of flow, and (c) extent and character of the pollution at the source. The extent of pollution is markedly influenced by what may be termed the defense mechanism. This consists in clogging of the latrine lining and surrounding soil with colloidal material, wholly or partially sealing the latrine from the ground water, together with the formation of a gelatinous, biological envelop. The formation of sludge and scum serves to retard the flow and to prevent the dispersions of viable bacteria. The effect of these factors is shown by the fact that after the latrine was five months old, significant recoveries could not be made even at five feet, and in 100 cc. quantities, although the test well was sunk directly in the center of the zone of pollution. Under no conditions was bacterial contamination detected outside of this pollution band, even within a few feet of the latrine.

It appears from these studies, therefore, that the pit or bored latrine is an effective

method of excreta disposal. Surface washing is prevented and, for all practical purposes, the ground water is not contaminated, since the narrow band of pollution which extends from the latrine in the direction of flow of the ground water, is, under optimum conditions, only a few feet long and becomes constantly shortened with prolonged use.

Media for Isolation of B. typhosus from Water.—While a few isolated instances of the recovery of typhoid bacilli from contaminated water supplies are on record, the difficulty of a reliable demonstration of their actual presence has led to the routine use of the detection of the easily isolated *B. coli* as an index of fecal pollution. In rounding out the studies of soil and ground water pollution at Andalusia, it is proposed to make observations of the rate and distance of travel of typhoid bacilli as compared with the members of the coli-aerogenes group. This will necessitate the development of dependable media which will permit the consistent demonstration of initial small numbers of typhoid bacilli in the water examined. The central laboratory has undertaken the development of such media.

The striking selective action of lithium salts and brilliant green in the isolation of *B. typhosus* from feces led to their use in media for its recovery from water. The problem has been to develop a medium in which *B. typhosus* will multiply rapidly, even when the inoculum is very small, and yet at the same time organisms of the coli-aerogenes group will be inhibited. After numerous experiments two media have been devised which meet these requirements. The basis of each is double strength bile. One contains lithium chloride in suitable concentration and a definite pH; the other contains both lithium chloride and brilliant green. With these media it has been possible, at every attempt, to detect as few as ten typhoid bacilli in 100 cc. of water, even when mixed with as many as 2,000,000 colon bacilli. In 50% of the trials one typhoid bacillus added to 100 cc. of water has been recovered. These media will be used to determine the distance to which *B. typhosus* will migrate from latrines bored into the ground water.

CURRENT STATISTICS

*PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA

	February	March	Estimated Expectancy March
Typhoid	10	10	39
Typhus	6	15	1
Malaria	24	16	76
Smallpox	19	17	67
Measles	46	114	886
Scarlet fever	81	55	80
Whooping cough	198	140	110
Diphtheria	86	55	77
Influenza	847	502	817
Mumps	155	165	201
Poliomyelitis	2	1	2
Encephalitis	10	9	3
Chicken pox	91	80	268
Tetanus	3	1	3
Tuberculosis	302	318	413
Pellagra	13	16	29
Meningitis	1	4	8
Pneumonia	256	327	534
Syphilis (private cases)	110	139	159
Chancroid (private cases)	2	2	11
Gonorrhea (private cases)	113	89	205
Ophthalmia neonatorum	0	3	2
Trachoma	1	0	0
Tularemia	3	0	2
Undulant fever	1	0	1
Dengue	0	0	0
Rabies	0	0	0

*As reported by physicians and including deaths not reported as cases.

The Estimated Expectancy represents the median incidence of the past nine years.

PROVISIONAL MORTALITY STATISTICS Alabama, February 1933

CAUSE	Number of Deaths Registered February 1933			Annual Rate per 100,000 Population		
	White	Colored	Total	Feb. 1933	Feb. 1932	Feb. 1931
ALL CAUSES	1120	961	2081	989.8	918.8	1145.2
Typhoid fever	2		2	0.9	6.0	1.9
Smallpox					1.9	14.1
Measles					1.4	2.4
Scarlet fever					6.5	1.9
Whooping cough	6	3	9	4.3	5.6	4.9
Diphtheria	6	5	11	5.2	4.4	7.7
Influenza	79	63	142	67.5	94.9	150.6
Pneumonia, all forms	96	64	160	76.1	94.9	150.6
Poliomyelitis					2.8	
Tetanus	2	1	3	1.4	79.1	76.8
Tuberculosis, all forms	66	94	160	76.1	73.5	70.9
Tuberculosis, pulmonary	58	89	147	69.9	2.3	2.4
Malaria					48.4	49.6
Cancer, all forms	62	39	101	48.0	6.0	11.2
Diabetes mellitus	17	9	26	12.4	12.1	14.1
Pellagra	14	10	24	11.4		
Cerebral hemorrhage, apoplexy	63	49	117	55.6	59.6	65.6
Diseases of heart	163	114	277	131.7	103.0	131.7
Diarrhea and enteritis						
Under 2 years	7	4	11	5.2	3.7	5.3
2 years and over	3	1	4	1.9	4.6	3.4
Nephritis	102	80	182	86.6	77.7	93.8
Puerperal state, total	18	16	34	16.2	17.2	17.5
Puerperal septicemia	5	4	9	4.3	5.1	5.8
Congenital malformations	13	2	15	7.1	3.2	6.8
Congenital debility and other diseases of early infancy	54	35	89	42.3	39.1	46.6
Senility	16	22	38	18.1	9.8	15.5
Suicides	16		16	7.6	8.8	6.3
Homicides	20	28	48	22.8	16.3	18.5
Accidental burns	10	13	23	10.9	8.4	12.6
Accidental drownings	2	2	4	1.9	2.8	3.9
Accidental traumatism by firearms	2	3	5	2.4	2.8	3.9
Mine accidents					1.4	1.4
Railroad accidents	3	3	6	2.8	0.9	4.9
Automobile accidents	17	6	23	10.9	17.7	17.5
Other external causes	20	*18	*38	18.1	17.7	15.5
Other specified causes	153	112	265	126.0	125.7	156.9
Ill-defined and unknown causes	84	164	248	118.0	85.2	109.8

*Includes 2 legal executions.

Book Abstracts and Reviews

The Practical Medicine Series of Year Books. Urology. Edited by John H. Cunningham, M. D., Associate in Genito-Urinary Surgery, Harvard University, Post-Graduate School of Medicine. The Year Book Publishing Company, Chicago, Illinois. 1933. 464 pages. Cloth. Price \$2.25.

This is the first year that the Practical Medicine Series has devoted one entire volume to urology. The tremendous increase in the knowledge of genito-urinary diseases has served to divorce this work from the field of general practice and establish it as a surgical specialty. Devotion of a single volume to this subject allows the author to give a more complete and comprehensive consideration to the large volume of current urological literature.

There are many papers which demonstrate the relation of diseases of the urinary system to the body as a whole and to other systems. Considerable attention is paid to intravenous pyelography and observations are made as to its probable logical place of importance in the future.

The literature on biophysics and biochemistry is reviewed and attention is called to the advances urology is making in line with the other medical and surgical specialties. The status of urinary antiseptics is brought up to date with the evaluation of the more recent additions. The debate as to the status of transurethral prostatic operations gives the reader a better perspective as to the permanent place they are to take in the field of urology. Many new details of diagnosis and treatment are brought out.

Practically every subject in the field of urology is touched upon and while it cannot be considered complete enough to be classified as a textbook, it serves a valuable service in bringing the reader up to date on urological subjects.

L. L. H., Jr.

Chronic Arthritis and Fibrositis—Diagnosis and Treatment. By Bernard Langdon Wyatt, M. D., F. A. C. P., Director, The Wyatt Clinic; Member Editorial Staff of "Acta Rheumatologica" of the International League for the Control of Rheumatism; Collaborating Editor, Archives Medico-Chirurgicales De l'Appareil Respiratoire; Member American Medical Editors' and Authors' Association; Formerly President and Director, The Desert Sanatorium and Institute of Research, Tucson, Arizona. William Wood and Company, publishers, Baltimore. 1933. 187 pages with bibliography. Cloth. Price \$3.59.

The continued existence of various medical cults—osteopaths, chiropractors, and other forms of quackery—is dependent upon the failure of the medical profession to afford relief from certain chronic disorders, among which chronic arthritis ranks first. We cannot blame the patient who has consulted recognized physicians and received only discouragement, or who has tried one doctor after another without relief, and who in desperation consults some one who at least gives him temporary comfort by simple massage administered under a "glorified" name. Far more frequently encountered than is cancer, arthritis receives far less attention, both in the literature and from the general practitioner with whom lies the responsibility for early diagnosis and treatment. If the general practitioner feels unqualified to treat chronic arthritis, it is not because of the ignorance of the profession in general but rather because the particular physician has not yet acquainted himself

with the facts which are available. There is no specific which will yield complete cures in all cases of arthritis, but there are several therapeutic measures—dietary, medicinal, endocrinal, surgical, and physio-therapeutical—which combined will retard the progress of the disease, relieve symptoms, perhaps improve or even cure the disease process. Such procedures are applicable only after adequate investigation to determine the type of arthritis present and condition of the rest of the body besides the joints.

This book furnishes the necessary information as to pathological classification, symptomatology, diagnosis and treatment. It is clearly written, logically presented but perhaps lacking in some essential details. The technique of all suggested laboratory tests is presented in outline form. The value of diet, of vaccine therapy, of drugs, vitamins, thyroid and ovarian extract are described in brief and considerable space is devoted to the various form of physiotherapy indicated in the treatment of arthritis. While the book possesses the two disadvantages of brevity and a lack of scientific proof of certain statements it will fill a much needed purpose in medical education. It is entitled to widespread distribution. C. K. W.

The Lungs and the Early Stages of Tuberculosis: By Lawrason Brown, M. D., Consultant, Trudeau Sanatorium; and Fred K. Heise, M. D., Medical Director. New York. D. Appleton & Co. 1931. \$1.50 net.

This is the title of a little book whose distinguished authorship will insure for it a wide reading. Nor need the fact that the book is one of Appleton's Popular Health Series, and hence written primarily for the laity, deter any medical man or phthisiologist from its careful perusal. Especially is the book to be commended to those who wish to possess a knowledge of the essentials of present authoritative thought in regard to those problems in tuberculosis with which the tuberculous and those caring for them are chiefly concerned. Within the compass of its small pages the author manages to discuss the anatomy, physiology of the lungs, the etiology, pathology, clinical types, symptoms, diagnosis, prevention, prognosis and treatment of tuberculosis.

This book and Dr. Lawrason Brown's well known book, "Rules for Recovery from Tuberculosis", should be read by every physician upon whom rests the responsibility of the guidance of the tuberculous and may be safely put into the hands of patients. S. B. McP.

The Practical Medicine Series: Neurology and Psychiatry. By Peter Basso, M. D., Clinical Professor of Neurology, Rush Medical College of the University of Chicago, and Franklin G. Ebaugh, A. B., M. D., Director, University of Colorado Psychopathic Hospital; Professor of Psychiatry, University of Colorado School of Medicine. The Year Book Publishers, Inc., Chicago. Series 1932. 488 pages. Cloth. \$2.25.

The neurology section of this volume contains well edited abstracts of all the major contributions to the literature dealing with neurological investigation during 1932. As usual, there are many abstracts referring to experimental laboratory procedures and their bearing upon clinical interpretation. This is not at all interesting nor practical for the general practitioner. To compensate for the above type of reading material are excellent

abstracts containing practical diagnostic and therapeutic aids. Dr. Harvey Cushing's classical clinical description of the relatively new entity, basophil adenoma of the hypophysis, is the outstanding work presented herein. This syndrome is lucidly described and accompanied by illustrations. The relationship existing between diseases of the nervous system and peptic ulcer occupy a prominent place also. This is another excellent abstract having practical value and from the above author. Head injury is dealt with in no less than twenty abstracts, due of course, to the ever increasing number of automobile accidents. Nerve lesions resulting from serums, vaccines, abortifacients, spinal anesthesia and unsuspected chemicals used in industries are described for the first time. The glycine treatment of myasthenia gravis and dystrophies, and the discovery of the new pituitary hormone "intermedin" may mark significant therapeutic advances. The neurological surgeons, as is customary, present new methods and the perfection of old ones, not to mention the disagreement as to choice of methods. Operation for facial paralysis and spasm and trigeminal neuralgia are abstracted in some detail. Chordotomy for relief of gastric crises is presented also.

The section on psychiatry contains numerous abstracts of interesting papers but no major problems dealing with diagnosis or therapeutics are solved. The social, forensic and psychological aspects of suicide are presented in readable fashion. J. H. W.

Practical Hematological Diagnosis: By O. H. Perry Pepper, M. D., Professor of Clinical Medicine, University of Pennsylvania; Assistant Chief of the Medical Clinic, Hospital of the University of Pennsylvania; and David L. Farley, M. D., Physician to the Pennsylvania Hospital, Philadelphia; and to the Cooper Hospital, Camden, N. J.; Associate in Medicine of the University of Pennsylvania. 562 pages, illustrated. Philadelphia and London. W. B. Saunders Company, 1933. Cloth, \$6.00 net.

The first section of this book deals with normal blood findings—the description of erythrocytes, leucocytes, and thrombocytes; the physiological variations in their number and quality; the methods of determining the hemoglobin content and the variations accompanying certain physiological conditions; the interpretation of bile pigment determinations; the discussion of the coagulating factors and a chapter on blood groups. The various tests for obtaining information as to the condition of the blood are described fairly adequately, though occasionally one finds that details have been omitted. A few illustrations would add a great deal to the value of this section.

The second part of the book deals with the blood picture in various diseases of the hemopoietic—the anemias, leukemias and hemorrhagic diseases. There are chapters on the special blood pictures found in infancy and on the modifications of the blood picture following irradiation, splenectomy, and certain frequently used drugs and chemicals. This portion of the book is very practical and is devoid of any discussions of purely theoretical nature. The subject is approached entirely from the standpoint of the hematologist and lacks description of the clinical features of the various diseases and the therapeutic features as well.

The third part of the book is devoted to a description of the blood picture found in the various

diseases in which the hemopoietic system is not primarily affected. The diseases are arranged in alphabetical order, over 400 clinical conditions being described. This section should appeal to the clinician who can find with ease information which will help him correlate the report of the pathologist with his tentative diagnosis. C. K. W.

Ten Years of Obstetrics and Gynecology in Private Practice—A Clinical Report of 1,750 Obstetrical Cases and 1,345 Gynecological Cases. By John L. Rothrock, A. B., M. D., F. A. C. S.; Formerly Associate Professor of Obstetrics and Gynecology, University of Minnesota; Former Member of the Miller Clinic and Chief of the Obstetrical and Gynecological Service of the Charles T. Miller Hospital and the Amherst H. Wilder Dispensary, St. Paul, Minnesota. Paul B. Hoeber, Inc., publishers. New York. 1933. 200 pages. Cloth. \$3.00.

Anyone interested in obstetrics should be interested in the report by Doctor Rothrock of his experience with 1,750 private cases. His excellent results are based on sound judgment and conservative treatment. When he loses a case or has a bad result, he analyzes his actions and suggests how the error might be prevented in the future. In his discussion of breech presentation, he is, perhaps, less conservative than in other fields.

The gynecological experience is but little less extensive. His series of 31 cases of ectopic pregnancy without a death demands consideration of his methods of diagnosis and treatment. His cases of carcinoma of the uterus were treated with radium, rarely in conjunction with x-ray and surgery. By comparing one's methods and results with those of the author, one may find causes for his failures and suggestions for improvement in the methods of handling his private gynecological cases. A. E. T.

Clinical Aspects of the Electrocardiogram, Including the Cardiac Arrhythmias. By Harold E. B. Pardee, M. D., Assistant Professor of Clinical Medicine, Cornell University Medical College; Associate Attending Physician, New York Hospital; Consulting Cardiologist, Lying-In Hospital and Woman's Hospital, New York City. Paul B. Hoeber, Inc., New York City, publishers. Third edition. 1933. 294 pages. Illustrated. Cloth. Price \$5.50 net.

The relative infrequency with which rheumatic fever occurs in the South reduces the percentage of cases of heart disease in which valvular defects play the major role. Though the stethoscope is an extremely valuable instrument, it can detect only murmurs and irregularities, and the latter can generally be detected equally well with the fingers. In the majority of cases of heart disease encountered in this State, there is no valvular defect and no murmur to be found and the stethoscope has not the great value which many of us have attributed to it in the past. In that group of cases in which disease of the coronary arteries with damage to the myocardium is responsible for the cardiac symptoms, we have but three methods of diagnosis. The x-ray will show enlargement of the heart but many hearts of normal size may be the seat of disease. A high blood pressure may suggest but does not prove the presence of disease of the heart muscle. The response of the pulse to moderate exercise may suggest early myocardial damage in the absence of valvular defects but the electrocardiograph is the only instrument which will detect even small areas of damage to the heart muscle. The practice of cardiology is impossible without its assistance and a failure to appreciate its value leads many general practitioners in the error of making

a diagnosis of indigestion when a patient's life is being endangered by coronary occlusion. The electrocardiograph was used originally as a highly technical instrument in physiologic research, later as a means of differentiating the various arrhythmias, but it now finds its field of greatest usefulness in the detection of myocardial damage.

Sir Thomas Lewis' "The Mechanism and Graphic Illustration of the Heart Beat" correlates the electrocardiac finding of normal and abnormal hearts with the pulse, the polygraphic tracing and with data learned in the experimental laboratory. It also defines the meaning of various waves seen in the electrocardiogram. S. Calvin Smith's "Heart Records" is devoted to a large extent to the technical points in taking electrocardiograms. Willius' "Clinical Electrocardiography" describes the various waves and intervals and points out their significance, giving statistical data as to their prognosis. Pardee's book approaches the subject from a different angle. It describes the various electrocardiographic changes found in normal hearts, in hypertrophied hearts, in myocardial disease, in ectopic rhythm and in the various arrhythmias. This point of view should appeal particularly to the physician who is already familiar with the method of interpreting electrocardiograms.

In this third revision, most of the chapters have been revised. Much new material has been added to the chapter on the electrocardiographic changes in myocardial disease and coronary occlusion, and the chapter on the clinical significance of the abnormal wave has been completely re-written.

C. K. W.

Truth About Medicines

PROPAGANDA FOR REFORM

Dilaudid.—The Council on Pharmacy and Chemistry reports that in the past few months a new narcotic drug, dihydromorphinone hydrochloride, has been introduced for clinical use in this country under the proprietary name "Dilaudid". It is marketed by Bilhuber-Knoll Corp., Jersey City. The drug has been used in Europe for some years, having been patented in 1923. Briefly stated, the drug is closely allied both chemically and pharmacologically to morphine, having the analgesic property of morphine as well as its action on the respiratory system. Its action on the intestine is probably less marked than is that of morphine. It is more toxic than morphine and is clinically effective in doses which are considerably smaller than are necessary with that alkaloid. The drug was brought to the attention of American clinicians largely by a statement by Alvarez of the Mayo Clinic, published in the *Proceedings of the Staff Meetings in August 1932*. In discussing the euphoric action of Dilau-

did, Alvarez stated that so far as he knew no one had as yet become habituated to its use. Unfortunately, this statement was unwarranted because already at that time a number of cases of addiction to Dilaudid had been reported in the literature. Shortly after Alvarez's remarks were made, a similar statement appeared in the public press apparently based on a release from "Science Service". Realizing the importance of furnishing accurate information in this case both to the profession and to the laity, the Council asked Dr. Nathan B. Eddy of the Department of Pharmacology of the University of Michigan to make a report to the Council on the general status of the alkaloid. From his study of this question Dr. Eddy concluded that it has been shown experimentally and clinically that Dilaudid is powerfully analgesic and that, like morphine, it can depress the respiratory mechanism profoundly; that at the same time, the experimentally established ratio between effective doses of morphine and Dilaudid for the production of desirable effects is not materially different from the ratio between their toxic doses; and that clinical trial has not shown that Dilaudid is free from tolerance and addiction evoking properties, and that, while side actions such as nausea, vomiting and constipation seem to occur less frequently after it than after morphine, the prolonged administration of Dilaudid should be entered on with as much caution as would be exercised with morphine itself. The Council has postponed for a reasonable length of time the consideration of the eligibility of Dilaudid for inclusion in New and Nonofficial Remedies in order to give the manufacturer opportunity to submit it and to revise the advertising in conformity with the available evidence. (Jour. A. M. A., April 1, 1933, p. 1031.)

Phenolphthalein as a "Patent Medicine".—Phenolphthalein was introduced into medicine as a laxative about thirty years ago, following the observation that certain of the cheaper Hungarian wines to which it had been added took on an actively laxative effect. Phenolphthalein is an odorless and almost tasteless powder, very slightly soluble in water. From the fact that it is nearly tasteless and is active in small doses, it is especially well adapted for the produc-

tion of what have been called candy medications. Among its disadvantages is a degree of variability in action, small doses sometimes acting excessively, when at other times a larger dose will fail to act. It may cause, in addition to purgation, colic, rapid pulse, difficult breathing, and even collapse. There may be no serious objection to a physician's prescribing phenolphthalein in candy form for a child, because the very conditions that surround the issuance and the use of a prescription are such as to make it highly improbable that the dosage recommended will be exceeded. It is an entirely different thing, however, to put up an active drug in the enticing form of candy or chewing gum, sell it indiscriminately to the public for self-medication, and advertise it in newspapers and over the radio by the ballyhoo methods common to "patent medicine" exploiters. It is a well-known fact that the public has a general idea that products sold as "patent medicines" are, broadly speaking, harmless. They have a feeling that the state would not permit the indiscriminate sale to the public of drugs that were really dangerous. How far this is from the truth, every physician knows, but the fallacy persists. The fact is, there is no legitimate excuse for putting up potent drugs in the enticing form of confections and selling them indiscriminately to the public. (Jour. A. M. A., April 29, 1933, p. 1358.)

The Vitamin D content of Cocomalt has been increased and now contains not less than 30 Steenbock (390 ADMA) units of Vitamin D per ounce—the quantity recommended for one drink. In addition to this richer Vitamin D content, Cocomalt contains a large supply of organic mineral salts, biologically favorable in their proportion of calcium and phosphorus. Mobilizing, as it does, the calcium and phosphorus present in Cocomalt, the Vitamin D content becomes especially effective in helping to ward off rickets and in promoting the development of strong bones and teeth. Cocomalt is licensed by the Wisconsin Alumni Research Foundation under Steenbock Patent No. 1,680,818, and was tested and accepted by the American Medical Association Committee on Foods. Physicians may secure samples from R. B. Davis Company, Hoboken, N. J.

Miscellany

SPECIAL TOUR

In connection with the annual session of the American Medical Association, convening in Milwaukee, June 12-16, the American Express Company is conducting a special tour embracing many points of interest in the West and in Canada.

A circular of information will reach each member of the Association through the mail, setting forth in detail all plans pertaining to the tour.

* * *

ADVERTISERS' NOTES

GOLF AND INFANT FEEDING

It is possible to play over the entire course with a single club and bring in a fair score. But playing with only one club is a handicap. The best scores are made when the player carefully studies each shot, determining in advance how he is going to make it, then selects from his bag the particular club best adapted to execute that shot.

For many years, Mead Johnson & Company have offered "matched clubs", so to speak, best adapted to meet the individual requirements of the individual baby.

We believe this a more intelligent and helpful service than to attempt to make one "baby food" to which the baby must be adapted.

* * *

Geo. W. Merck, President of Merck & Co., Inc., recently announced the appointment of Dr. Hans Molitor, of the University of Vienna, to the research staff of the company. Dr. Molitor will assume the direction of research work in pharmacology. In announcing the appointment, Mr. Merck stated:

"The addition of Dr. Hans Molitor, of Vienna, to the staff of Merck & Co. Inc., results from the decision of the management to adopt a policy of intensive research in pure and applied chemistry and allied subjects. To provide adequate facilities for this research work, Merck & Co. Inc., despite the depression, is constructing at Rahway, N. J., at the present time, a research laboratory to cost in excess of \$200,000, which will house a staff of 25 research chemists. Dr. Molitor will take over the supervision of the details of equipping and staffing the laboratory to be devoted to research in pharmacology.

Dr. Holitor comes to this country with a background of scientific accomplishment in the universities and hospitals of Europe. Born in 1895, in Austria, he took up his studies in the University of Vienna under the faculty of medicine in 1913, receiving his Doctor of Medicine degree in 1921.

During the last year of the war, he did a considerable amount of outstanding bacteriological work, and following it he was an interne in the clinic of Professor Chvostek in Vienna. During the years 1919, 1920 and 1921 he was an interne in surgery and gynecology, and in the eye section of the hospital at Reichenberg.

From September 1921 to September 1923 he was an assistant in the Department of Pharmacology in the University of Vienna, later receiving a stipend from the Rockefeller Foundation, and studied in the University of Edinburgh under Prof. Barger and worked in pharmacology under Prof. Cushny of that institution.

Following his studies in Scotland he also spent some time in Cambridge, London, and Utrecht, returning in 1924 to Vienna to the faculty of the University, where he continued his work in pharmacology until June 1931, when he was made Extraordinary Professor of Pharmacology in that university.

Dr. Molitor has published a number of reports under his own name and jointly with his colleagues on various topics associated with pharmacological research work."

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THE JOURNAL

OF

The Medical Association of The State of Alabama

Published Under the Auspices of the Board of Censors

Vol. 2, No. 12

Montgomery, Alabama

June 1933

SOME RECENT CONTRIBUTIONS BY SCIENCE TO THE FIELD OF MEDICINE*

IRVIN ABELL
Louisville, Ky.

The recent contributions of science to the field of medicine have come chiefly from the fields of biophysics and biochemistry. The science of physics has developed instruments of precision both in diagnosis and treatment. In recent years the study of the heart and its diseases has been tremendously enhanced by the electrocardiograph, a galvanometer sensitive to one sixty-millionth of an ampere, which accurately records the contractions of the heart muscle and permits interpretations of disease obtained in no other way. An interesting feature of such tracings is that, like finger prints, each is specific for the individual from whom it was made.

The science of pharmacology has aided in the treatment of heart affections by furnishing preparations of digitalis of known strength. Preparations of this drug may be active or inert; today each one is tested on frogs or cats; the minimum amount required to kill a frog or a cat of given weight is designated as a unit, upon the known strength of which the dose for the human can be accurately computed according to weight.

The x-ray has been made to visualize the innermost recesses of the body, bringing to diagnostic light parts hitherto remaining dark except when exposed by open exploration. The intestinal tract from the mouth to its lower termination is filled with barium under actual inspection which together with subsequent films or pictures show its

contour and permit accurate recognition of deviations from the normal.

A harmless combination known as lipiodal is injected into the sinuses of the head and the bronchial tree of the lung, giving ready visualization.

The gallbladder and the kidneys with their eliminating ducts are made visible by the injection into the veins of dyes which are eliminated only by the liver and kidney.

Even the recesses of the brain are yielding data of diagnostic value with the injection of air into its ventricles or cavities, making the contour and relations of the latter visible to x-ray examination.

The same is true of the abdominal cavity, the injection of air into which permits x-ray recognition of the size and relations of its organs.

Physics is playing its part in treatment, notably in fractures, in the management of which the principles of physics have been uppermost in securing the greatly improved results of today.

The surgical treatment of pulmonary tuberculosis is based largely on the principles of physics in securing rest for the diseased lung rather than in surgical attack on the disease itself. Division of the phrenic nerve, which supplies the diaphragm, one of the chief muscles of respiration, paralyzes in part its activity, relieving the diseased lung of part of its constant motion, furnishing the needed rest for recovery. The same result in greater degree is accomplished by removing sections of the ribs on the affected side, with resulting collapse of the chest wall and physiologic rest for its contents. Tuberculosis of the larynx or talking box has in past years signalled the beginning of the end; today, as the result of the labors of Strandberg, the carbon arc light is curing an appreciable number of otherwise hopeless individuals.

*Address delivered at the public meeting of the Association in annual session, Montgomery, April 19, 1933.

Syphilitic disease of the brain known as paresis, heretofore an incurable malady, is today arrested by fever therapy. The fever is induced by inoculation with the germs of malaria, the temperature elevation being continued for periods of ten to twelve days at a time. This results in an arrest of the degeneration in the brain and if applied early in the course of the disease the patient is restored to community capacity; if applied late it still arrests the disease but does not overcome the degeneration which has affected mental ability. The beneficent effect of this treatment was at first thought to be due to action of the malarial germ on the syphilitic germ; at present it is believed due to the stimulation of certain cells of the body by the continued fever. It is interesting to note that at present an electrical device has been perfected by which the temperature of the body can be elevated to any given degree and maintained as long as desired for carrying out such treatment.

The science of chemistry applied to the study of the body in health and disease has thrown a flood of light upon phenomena hitherto unknown or but imperfectly understood and presages for the future the chief line of advance in the march of medical progress. That various organs of the body form chemical substances which are of importance as regulators of body functions is an idea long entertained. Primitive peoples had some such conception when they ate the hearts of their enemies to increase their courage. The ancient physicians followed the same line of thought when they prescribed wolf's liver for hepatic disease, rabbit's brain for nervousness and fox's lung for respiratory disorders. We now know that certain glands in the body form secretions termed hormones which are distributed to the body by means of the blood and which alter or modify its functions. The important ones in the light of our present knowledge are the thyroid, the pituitary, the adrenal, the sex glands or gonads, the pancreas and the liver.

The thyroid, situated in the neck, is known to lay-people through the name given by them to most of its diseases—goitre. The active principle of the gland is thyroxine, of which there is but $1/5$ th to $1/4$ th grain in the body at one time, the to-

tal amount needed for the year being but $3\frac{1}{2}$ grains. This pinch of material spells the difference between imbecility, normal health and disabling disease. When inadequate in the infant, a stunted, bandy-legged imbecile results; when in excessive amount at any age, an unstable nervous mechanism with secondary degenerations of heart and kidney follows. It largely regulates the amount of energy produced in the body and deviations from the normal produce dire results. The test by which the production of energy in the body is determined is known as the basal metabolic rate test; this is also known as the goitre test and records with mathematical accuracy the deficiency and the overactivity in secretion of thyroxine by the thyroid gland.

The diseases of the thyroid gland may roughly be divided into two groups, one the insufficiencies and the other the overactivities, the latter known as exophthalmic goitre or Graves' disease. Since thyroxine is 65% iodine, the development of the first group can be prevented by the administration of iodine. In the goitrous districts, known as such because of the widespread prevalence of the disease, it is assumed that a lack of iodine in the water and food causes an overwork on the part of the thyroid gland in an effort to manufacture sufficient thyroxine for the needs of the body, resulting in its disease. The correctness of this is proved by the prevention of goitre in such districts by the administration of iodized salt, a combination of iodine and table salt.

In the overactivities, iodine has proved of value in preparing patients for operation, forming when administered by mouth, a chemical combination with the thyroxine, thus neutralizing its activity and permitting a subsidence of symptoms, during which its excessive formation may be curtailed by a removal of a part of the gland.

The pituitary gland, quite small, weighing but 10 grains, is situated at the base of the brain. It secretes three hormones, one having to do with growth, one with sex function and one with the action of the involuntary muscles. A deficiency of the growth hormone results in a diminutive man, a dwarf or midget; an excessive amount results in a symmetrical giant. If the overactivity of the gland occurs after

puberty, well rounded development is no longer possible, the resulting overgrowth taking place only in such parts of the body as are susceptible to the hormone, resulting in a misshapen individual who seems to have reverted to the gorilla type. Deficiency of secretion in adults results in abnormal deposit of fat, largely in trunk, hips and thighs,—the face, breasts, hands and feet showing but little increase.

The sex hormone, Prolan A and B, produces rather amazing results in laboratory animals, the A hastening maturity with stimulation of the sex urge and early reproduction, the B producing sterility. So far quite a good deal has been accomplished in the application of these two hormones to the correction of human ailments and the published reports in medical literature indicate that the research work under way will shortly produce even more tangible results. The third pituitary hormone, influencing involuntary muscle and known as pituitrin, is in daily use as a stimulant to the heart, to the uterus and to the intestine.

The adrenal or suprarenal glands, two in number weighing about 60 grains each, are situated one over the upper part of each kidney. The hormones secreted by the glands are known as cortin and adrenalin. An excess of cortin causes marked accentuation of masculine sex traits, the male showing a marked accentuation of virility, the female a transformation toward the opposite sex. The deep-voiced, coarse-featured, bearded ladies of the sideshows are probably victims of this glandular mishap. A deficiency of cortin results in what is known as Addison's disease, a heretofore fatal malady. At present, for the first time, extracts of the gland containing cortin are being used in the treatment of this disease with the promise of good results. The second hormone, adrenalin, stimulates the heart, raises blood pressure, controls surface bleeding, and is of great value in temporarily relieving asthma and hives.

The sex glands or gonads constitute the essential organs of reproduction, the female furnishing the egg, the male furnishing the fertilizing element; in addition both secrete a hormone which affects structural development. Removal of the gonads in both sexes before puberty profoundly affects the further structural development of the body,

causing an absence of the masculine and feminine features and traits which are referred to as the secondary sexual characteristics. So far but little has been accomplished in securing the hormones of the male gonad while much has been attained in identifying and making extracts which contain the various hormones of the female gonad. These are now successfully used in establishing delayed puberty or maturity, in regulating the menstrual cycle, in controlling the nausea of pregnancy and in relieving the distressing symptoms of the menopause.

It has been recently shown that the urine of the pregnant woman contains a hormone of pituitary origin which is used in making a diagnosis of pregnancy. Before the advent of this test, the only positive signs of pregnancy were the heartbeats of the fetus, fetal movements and the detection of the fetal bones by x-ray examination,—none of which can be elicited before the fourth month of pregnancy. The hormone of the pregnant woman appears in the urine within two to five days after impregnation and when such urine is injected into the abdomen of the female rabbit it produces a hemorrhage into the follicles of the ovary containing the eggs. The test requires but 48 hours and permits the recognition of pregnancy in from twelve to sixteen weeks earlier than by former methods.

The pancreas or sweetbread, situated in the abdomen behind the stomach, is the most powerful gland of the digestive system furnishing to the intestinal tract three ferments or enzymes which have to do with the digestion of fats, carbohydrates and proteids. It also possesses an internal secretion, a hormone called insulin, which is essential to the proper utilization by the body of sugar-forming foods. Diabetes is a disorganization of the metabolic processes by which the body utilizes foodstuffs for the production of energy due to insufficient elaboration of insulin by the pancreas. It is characterized by an increase of sugar in the blood and later in the urine. Left to itself it is often fatal; with the administration of insulin made from the pancreas of the lower animals the body sugar functions are restored to a normal balance with the result that diabetics are enabled to live out an ordinary life. Formerly tabooed as sur-

gical patients, they now, with the aid of insulin, withstand with relative safety operations for the relief of ailments which formerly were regarded as necessarily fatal.

The liver is the most important biochemical laboratory in the body, possessing multiple functions of chemical character which have to do with body welfare. A new one was brought to light when in recent years it was discovered that liver substance possessed a hormone which stimulated the formation of red blood cells. Anemia is a deficiency of red blood cells and their iron-carrying constituent and is dependent upon one of three known causes, namely, bleeding, excessive destruction of red blood cells in the body and a lack of production of red blood cells by the blood-forming organs. The last named are known as primary anemias or pernicious anemias, the latter adjective indicating its almost inevitably fatal outcome. Blood transfusions, foods rich in iron and medicaments supplying the latter element have afforded but transitory improvement. The administration of liver or its extract stimulates the blood-forming organs, notably the red bone marrow, with the result that red cells are formed in normal quantity and carry on the functions so essential to life.

Extremely interesting are the achievements which have been made in the field of immunity.

The individual as well as the species and the nation are constantly employing the means at hand to protect themselves against their enemies and striving to develop new ones of increased efficiency.

Chemical warfare of the recent world contest was long antedated by the skunk in his onslaught on the olfactory sense; the smoke screen of the destroyer but followed the example set by the cuttlefish or squid with its ink cloud; the poisoned arrow of the savage but imitated the fangs of the venomous snake.

Nature has provided some animals with claws, some with tusks, others with impervious skins and shells to afford them protection against their natural enemies.

Man the individual is constantly surrounded by bacteria which threaten his health and his life; they are to be found in the nose, throat and intestine, on the skin and on the food upon which he depends for

sustenance. What are the forces of resistance which we group under the term immunity which enable him to resist their disastrous invasion? The hydrochloric acid of the stomach secretion proves destructive to many that enter with the food while certain body reactions and functions resist entrance and growth within its organism.

Immunity may be classified as natural and acquired and the important known factors in its maintenance are three: first, antitoxins or antibodies which are manufactured by the body to neutralize the toxins or poisons produced by given bacteria and which serve further to inhibit the growth of the latter; second, the presence in the body fluids of two substances, the first of which renders the bacteria susceptible to destruction by the second; and third, the action of certain cells of the body in incorporating the invading bacteria within their own substance and devouring them. When bacteria gain entrance to the body these three qualities are the determining factors in recovery and restoration to health or in disease and death. Nature, in addition to fighting bacteria by means of these three activities, produces in the blood stream materials which have the property of causing the bodies of the bacteria to adhere to each other in groups or clumps. This is the underlying principle in the serum test for typhoid fever, rabbit disease or tularemia, Malta fever, and with some modification, the blood test for syphilis.

The blood serum of the patient suspected of having typhoid fever is added to a growth of typhoid bacilli or bacteria; if the latter agglutinate or clump together, it is positive proof of the presence of typhoid infection in the patient from whom the serum was taken. It is of course possible that an individual may have been endowed by nature at birth with these properties in resisting infectious disease; there are, however, certain observations which lend credence to the belief that exposure to infection has resulted in mild or overlooked disease which has resulted in their production in the body. Aboriginal people who have had no opportunity to come in contact with infectious diseases are notoriously susceptible to them whereas people living in more or less crowded communities show a varying immunity to them.

Forty per cent of adult people living in the country are susceptible to diphtheria while but fifteen per cent of city inhabitants show susceptibility.

Infantile paralysis is best treated by serum obtained from convalescent patients, yet 70% of the serum obtained from otherwise healthy adults shows the same protective quality, indicating that they have had the disease in a mild unrecognized form resulting in the formation of antibodies in their blood.

Acquired immunity is either passive or active. Passive immunity is conferred on the human by injecting into him the serum of an animal in which the antitoxin or antibodies have been formed as the result of injections of dead bacteria together with the toxin or poison they have produced in their growth. The best known example of this type of immunity is afforded by the serum treatment of diphtheria as introduced by Von Behring of Marburg, Germany. Beginning with minute quantities, the dead diphtheria bacteria with their toxin are injected in constantly increasing doses into the horse until the blood of the animal contains a maximum quantity of the antitoxin or protective substance which the horse has manufactured to neutralize the injected toxin. The blood serum which contains the antitoxin is then withdrawn, as much as five to eight quarts at one time, treated with a preservative and sealed in suitable containers for later administration to the human diphtheria patient. At the present time the only excuse for a death from diphtheria is tardy recognition and delayed serum treatment.

Serum prepared in the same way is used in the treatment of lockjaw, scarlet fever, gas gangrene, and some types of pneumonia, but not with the uniformly good results obtained in diphtheria.

Active immunity is developed in the human by an attack of an infectious disease and by the injection of vaccines. The body by means of the three factors mentioned recovers naturally from many germ infections, both mild and severe. Pasteur, working on fowl cholera, noticed that old laboratory cultures failed to kill artificially infected fowls while fresh cultures did so and he further noted that if fowls were first infected with old germs weakened by aging

and several weeks later, with freshly isolated ones, they failed to contract the disease or showed an increased resistance to overwhelming doses. This as well as Jenner's discovery that milkmaids infected with cowpox did not contract smallpox has led to the development and use of vaccines as a prevention of infectious diseases. A vaccine essentially consists of the weakened or killed germs which are injected into the body. The substance released on the disintegration of these germs stimulates the body tissue to increase its antibodies or germ-resisting substance so that the person on natural exposure to an infection is better able to overcome it. At the present time vaccines are fairly successful in preventing smallpox, rabies, typhoid fever, boils, common colds, diphtheria and scarlet fever. Smallpox, as a menace to civilization has disappeared, rabies is effectually prevented and typhoid fever no longer takes its wonted toll. The disappearance of the latter is in large measure to be credited to sanitary science since the detection of the typhoid bacillus as its cause and of its known spread permitted sanitary regulations to greatly control its incidence before the employment of the vaccine was generally adopted. During the Spanish-American War, one soldier in every five contracted the disease, while during the World War but one in four thousand showed the infection. The immunity against colds and boils produced by vaccine is of but short duration, at the end of which patients again become susceptible. A great advance in immunology has been made in scarlet fever and in diphtheria in that tests now reveal those susceptible to them. Known respectively as the Dick and Schick tests, they consist in injecting into the skin minute quantities of the toxin of the respective causative bacteria; in immune persons no reaction is noted while in susceptible ones a discoloration appears at the site of injection within 24 to 36 hours. Persons of known susceptibility can then be rendered immune by further injections of the toxin.

Bacteriophage, one of the newest names in the field of immunity, means the eating of bacteria. Searching for filterable viruses—namely, germs that are invisible even under the microscope and that will pass through the pores of an earthen filter, Dr.

F. d'Herelle in 1917 discovered that filtrate of stools of a dysentery patient undergoing improvement would digest young dysentery germs growing in a liquid medium causing the turbidity of bacterial growth to disappear. The destructive agent is known as a phage (protect against disease—Greek) and is believed to be a minute parasite which destroys the bacteria by eating them or else are enzymes causing their digestion as the enzymes of the stomach digest food. It is finding an ever widening field of usefulness and furnishes another lead in overcoming the infectious disease.

Studies in immunity are yearly reducing the death rate from infectious diseases. Pneumonia, designated by Dr. Osler as the captain of the forces of death, and responsible yearly for 30,000 deaths in the 100,000 cases in this country, has been made to give ground, the death rate having been reduced in certain types from 26% to 11% by means of serum treatment. Each serum is specific only for the germ causing a given disease indicating the complexity of the reactions by which the body protects itself against the many bacterial enemies which assail it. The accomplishments of the past and the present in the study of the chemistry of the body augur well for the future and hold out the hope that in the fight against infectious diseases science will in the end be accorded the victor's palm.

Fractures of the Femur—In the management of a case of fracture of the femur, the attending physician must know the anatomical points to be considered; the site of the fracture, whether in the lower, middle third or upper third, or whether the neck of the femur is involved, and he must also know the physiological and functional considerations, as well as have an understanding of the application of the mechanical principles involved. For instance, in fractures of the lower third of the femur the knee joint with its motion—the attachment of the gastrocnemius muscle pulling the lower fragment backward, while the quadriceps extensor group is causing the lower fragment to ride upward over the upper fragment, thus producing a deformity—must be taken into consideration. It is necessary here to overcome the muscle spasm of the quadriceps group by continuous traction, and by relaxing the gastrocnemius by flexion, the fragments are brought into apposition and so maintained by suitable measures until union has occurred.—*Dorman, Texas State J. Med., May 1933.*

THE CLINICAL SYNDROMES OF THE SURGICAL SPLEEN*

HAROLD E. SIMON, M. D., F. A. C. S.
Birmingham

Recent dramatic developments in the surgical treatment of certain diseases of the spleen hardly have an equal in surgical procedures. Numerous conditions, many of them associated with chronic invalidism or semi-invalidism and frequently terminating fatally, are clinically cured or are permanently or temporarily improved following splenectomy. The futility of splenectomy in certain other such conditions has likewise been demonstrated.

A HISTORICAL RESUME

Splenectomy was not unknown among the ancients.¹ They are believed to have practiced removal of the spleen in order to improve the wind of runners. The great speed of the giraffe was attributed to its supposed lack of a spleen. Neither of these beliefs has proven to be true.

Pliny stated that the spleen might be removed and the patient live, but that melancholy developed thereafter. He stated that persons with intemperate laughter always had great spleens.

An experimental splenectomy was performed on a dog in 1680. (Zambeccari). By 1875 it had been shown conclusively by numerous experimenters that the spleen could be removed and the animal live. During the 16th century there were three reports of successful splenectomy in man, twice for enlargement and once because the spleen protruded from an abdominal wound. During the 17th century two additional splenectomies were reported, both for protrusion of the spleen, both successful. Since 1860 splenectomy has been performed with increasing frequency. Now the operation is performed fairly frequently and the indications and limitations of the procedure are established with some degree of certainty.

PHYSIOLOGY

The spleen is the largest of a number of organs and tissues which have functions in common. These tissues constitute the reticuloendothelial system and include the bone

*Read before the Association in annual session, Montgomery, April 18, 1933.

marrow, certain of the liver cells, the lymph glands, the histiocytes and others. This fact explains the absence of any untoward symptoms following splenectomy and is the basis for W. J. Mayo's² statement that the spleen is more important pathologically than physiologically. In its absence these other tissues are largely able to carry on its physiologic activities.

Removal of the spleen in the normal individual, as in traumatic rupture, produces no important clinical disturbances. Some variability in the number of erythrocytes may result and there is apt to be an increase in the lymphocytes, usually only temporary. The hemoglobin content of the cells, however, remains practically unchanged. (Jerome Meyers).³

The most important and best established of the splenic functions are three:

1. The destruction of worn-out red blood corpuscles and platelets.
2. The production of lymphocytes and phagocytes.
3. The removal of bacteria, foreign bodies and, perhaps, also certain toxic substances from the blood stream.

With these functions in mind it is possible to explain the results of splenectomy in many of the syndromes in which it is performed.

It should be borne in mind that enlargement of the spleen from whatever cause increases its erythrocyte-destroying power. While splenectomy may remove this disturbing factor and for this or other reasons result in clinical cure or improvement of certain conditions, yet the etiologic agent in the production of the syndrome may persist. In hemolytic icterus, for example, splenectomy stops the rapid destruction of the over-fragile erythrocytes, but the production of the subnormal cells continues. Likewise, in hemorrhagic purpura the destruction of the platelets by the spleen ceases with splenectomy, but the underlying cause of the disease is probably not removed.

CLINICAL SYNDROMES

The conditions which are commonly associated with the splenic disorders may be conveniently divided into three groups depending on their response to splenectomy:

Positive indications for splenectomy

Relative indications for splenectomy

Splenectomy contra-indicated or useless

Hemorrhagic purpura
Hemolytic jaundice
Splenic anemia
Ruptured spleen:
 Traumatic
 Spontaneous
Primary tumors & cysts

Polycythemia
Biliary cirrhosis
Myelogenous leukemia
Syphilis
Malaria
Pernicious anemia
Feltz's syndrome
Septic splenomegaly
Gaucher's disease
von Jaksch's disease
Splenic abscess
Unclassified

Hodgkin's disease
Portal cirrhosis
Aplastic anemia

It will be possible at this time to consider only briefly a few of the major conditions for which splenectomy is performed. We cannot describe these syndromes in great detail or consider the differential diagnoses.

1. Thrombocytopenic hemorrhagic purpura: This condition may be either acute, subacute or chronic, depending upon its duration. It frequently dates from childhood. It is remittent in character and is characterized by hemorrhages from the nose, gums, stomach, uterus, and by petechial hemorrhages beneath the skin. Splenic enlargement is usually moderate but may be absent. The positive tourniquet test, in which a shower of cutaneous hemorrhages appears after the application of a blood pressure band for three minutes at a pressure midway between the diastolic and systolic, is the most valuable clinical aid in the diagnosis.

The laboratory findings are characterized by a greatly reduced platelet count, a prolonged bleeding time, a normal coagulation time, the absence of retractility of the clot and by secondary anemia of varying degree.

Splenectomy is indicated in chronic cases unless very mild. It yields spectacular results. Acute cases which have been present for a few days or a few weeks, subacute cases whose duration is from a few months to a few years, and the mild chronic cases should not be subjected to splenectomy.

These often clear up following removal of foci.

2. Hemolytic jaundice:⁴ Hemolytic jaundice may be congenital or acquired. It is characterized by jaundice of the hemolytic type with crises in which there are deepening of the jaundice, abdominal distress, nausea, vomiting, slight fever and headaches. The spleen is moderately enlarged. The laboratory findings consist of the absence of bile but the presence of urobilin and urobilinogen in the urine; bile is present in the stool. The van den Bergh test is positive indirectly but negative directly. There is moderate to severe anemia. The leucocytes are slightly increased. The characteristic blood finding is marked increase of the fragility of the erythrocytes.

While hemolytic jaundice is entirely independent of pathology in the biliary system, pigment stones occur secondarily in the gallbladder in approximately 60% of the cases. These result from the increased amount of bile pigment excreted by the liver. If these stones produce obstruction in the common duct, the clinical picture is thereby modified and bile may occur in the urine and be absent in the stool and the van den Bergh test be positive directly and indirectly.

Splenectomy results in prompt clinical cure. It is of interest that the fragility of the erythrocytes does not change notably after splenectomy even after long periods of time, and it is probable that the removal of the spleen merely stops the extensive destruction of these over-fragile erythrocytes and does not remove the cause of the increased fragility.

SPLENIC ANEMIA

Splenic anemia in its advanced stages is usually classified as Banti's disease. The age of onset varies between 2 and 70 years but the average is 33 years. There is early enlargement of the spleen in all instances, usually marked and associated with some discomfort. The liver is often enlarged, especially in later cases, and ascites is part of the Banti syndrome. Hemorrhages are frequent and usually gastric in origin. The laboratory findings are not particularly characteristic and consist of a moderate secondary anemia, with leucopenia at times.

Splenectomy is followed by excellent results although it is sometimes rather difficult owing to the nearly constant presence of perisplenic adhesions. In the presence of advanced cirrhosis, the mortality rate is rather high.

SPONTANEOUS RUPTURE OF THE SPLEEN

Spontaneous rupture of the spleen is characterized by sudden severe pain over the splenic region which often subsides temporarily except for a dull ache. Later the pain returns, is more severe and radiates to the left shoulder. (Kehr's sign.) As the condition progresses shock develops and an increasing area of dullness may be noted in the left flank which seldom shifts with change of position. The presence of some etiologic condition such as cancer of the liver, typhoid fever, malaria or other conditions, which increase the intra-splenic pressure, may point the way to the diagnosis. The treatment is splenectomy.

FELTY'S SYNDROME

Felty's syndrome⁵ is a recently described but infrequently recognized condition. It is questionable whether it is a distinct clinical entity or an arthritis superimposed upon a Banti's syndrome. It is characterized by arthritis in a middle-aged adult with enlargement of the spleen. The bone changes are slight or moderate and the spleen enlarges with or without regional discomfort. The average duration of the condition was found to be 4½ years.

There is characteristically a severe leucopenia, a marked lymphocytosis and a moderate secondary anemia. Urobilin is present in the urine. Splenectomy in one case was very successful.

It would appear that the differential diagnosis of conditions associated with enlargement or disorder of the spleen would be exceedingly difficult. Such is seldom true if the laboratory findings are carefully correlated with the clinical history. In some instances a clinical syndrome cannot be identified with any of the syndromes at present recognized. Failure to make a definite diagnosis does not always contraindicate splenectomy in progressive and severe processes in which contraindications to splenectomy are not present, and in which it would be reasonable to expect improvement.

SURGICAL CONSIDERATIONS

With proper preoperative and postoperative management and the careful selection of patients, splenectomy usually carries a surgical mortality which compares very favorably with that of other major abdominal procedures; it should not exceed 5% according to W. J. Mayo. In some instances the hopelessness of a patient's condition may justify additional surgical risk in order that he may not be denied the benefits of a life-saving procedure.

THE PREOPERATIVE PREPARATION

It is essential that surgery be avoided during the crises which characterize so many of these conditions. The patient may usually be tided over these crises with transfusions and conservative treatment. Transfusions should be employed freely to combat the anemia which is so often present, for its influence on the bleeding time, and in order to prepare the patient for the sudden decrease in blood volume which results from the removal of a large spleen with its blood content. Hepatic functions may be materially increased by the use of merbaphen and similar substances.

The choice of the anesthetic for splenectomy will depend to some extent upon the surgeon's individual preference. In the presence of advanced renal damage, spinal anesthesia may be indicated but it is the writer's opinion that ether anesthesia is preferable to and safer than spinal anesthesia except in isolated instances.

TECHNIQUE

In no other type of surgery is adequate exposure more essential than in the performance of splenectomy. This may be obtained through a long left rectus or a transverse incision. Accurate hemostasis is very essential. In the presence of adhesions which are not infrequently found, bleeding may be controlled by hot packs and by ligation of vessels. After the spleen is freed it should be turned over toward the midline and the exposed pedicle brought into view directly beneath the incision. In order to prevent excessive engorgement of the spleen immediately previous to its removal, the artery should first be doubly ligated; then the veins. The vessels of the pedicle and the vasa brevia should be carefully iso-

lated and in no instance should the pedicle be ligated *en masse*.

Careful search should be made for accessory vessels which are often present and for accessory spleens any one of which may cause troublesome bleeding when overlooked. Injury to the pancreas and stomach should be carefully guarded against.

POSTOPERATIVE COMPLICATIONS

Careful attention to the preoperative preparation and to the correct surgical procedures does much to minimize the dangers of convalescence. Hemorrhages and shock are largely preventable. Ascending thrombophlebitis is a complication which may result fatally.

DISCUSSION

The study of diseases associated with splenic disorders is only in its infancy. We are often obliged to deal with end results rather than with early stages of disease processes, to treat conditions symptomatically rather than etiologically. With earlier diagnosis, better classifications of syndromes and diseases, and with the discovery of etiologic factors, we may look to the future for even more dramatic developments in splenic surgery than have been accomplished in the past.

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Encephalitis—In the treatment of encephalitis there are no blanket rules and no panaceas. The treatment must be approached with the form of encephalitis clearly in mind and preceded by laboratory investigations.—*Tucker, Va. M. Monthly, June 1933.*

YEAST INFECTIONS*

PART III

SYSTEMIC BLASTOMYCOSIS AND BRONCHOMYCOSIS

GROESBECK WALSH
Fairfield

Cases of torula infection are readily recognized, as they most commonly invade the central nervous system. The organism is also easily differentiated, as it reproduces by budding; rarely, if ever, ferments sugar; and does not form mycelium on culture.

The *Coccidioides immitis* is just as easily differentiated as the torula; but between these two sharply defined types of infection lie a large loosely gathered together group of diseases, which are called, indiscriminantly, blastomycosis, monilia infections, and oidiomycosis. There seems to be no sharp distinction drawn, and, of course, the organisms may eventually turn out to be identical. These infections are most commonly found in the skin and in the respiratory system, although the question of intestinal infection has recently been accentuated due to Ashford's work with *Monilia psilosis* in connection with sprue.

A large proportion of systemic blastomycotic infections brought to autopsy show involvement of the lungs. This loosely gathered together group of cases have been reported from all over the world, and have shown involvement of practically every tissue in the human body.

Castellani²² has called attention to the tea taster's disease, which is common in Ceylon, and which is found not only among tea tasters—who bury their faces in the dry tea leaves for the purpose of defining the taste and aroma—but also among workers in the tea factories where the air is filled with the dust of dry tea leaves. Castellani has determined that the disease found in these people, which is characterized by chronic cough, loss of weight, low temperature, and evidence of slowly progressing infiltration of the lungs, is due to the monilia in the class *fungi imperfecti*. It is rather ap-

parent from the literature that quite recently a great deal of attention has been drawn toward the question of monilia infections.

Keating²³ described twenty-five cases of monilia infection of the bones and joints, which he has encountered in his work in the past four years. He detailed the effect of the monilia as chronic, causing localized areas of absorption, increased density of the surrounding cortex, and irregular hypertrophy of the periosteum. The process may go on to abscess formation. Involvement is frequently widespread, and occurs in more than one bone, but intervening joint cartilages seem to remain at least partially intact. These cases have been chronic in character, and have not shown the terrifically destructive signs which are so frequently encountered in coccidioidal granuloma. No fatalities are reported in his series. He used iodides, neoarsphenamine, x-ray, and a specific antigen. Of the twenty-five cases two have been described by him as Paget's disease, and eight as chronic arthritis atrophic.

Recently two papers have appeared in the literature under the heading of "bronchomycosis"; and on analysis both these papers are found to contain a discussion of a group of fungus infections of the lungs, which were determined to be due to the monilia. The expression "bronchomycosis" in this instance is wisely chosen, as it does not infer any rigid classification which might clash with some previous method of description.

A particularly interesting paper by Stovall and Greely²⁴ reports the histories of eighteen patients who suffered from yeast-like infections, in which they determined that the primary focus was in the lungs and the infection was due to monilia. These descriptions are interesting because they call our attention very forcibly to the fact that these cases did not end in fatalities, although they are in truth systemic infections with yeast fungus. Stovall and Greely²⁴ state that all but one of these eighteen patients were still living, some were improving, and others not doing so well. Their interest in the cases was excited by the frequency with which yeast-like organisms were found during the routine examination for tubercle bacilli. The cases which they

*Last of a series on the subject. Parts I and II appeared in the April and May numbers, respectively.

*From the Medical Section of the Employees' Hospital, Fairfield.

*Read before the Jefferson County Medical Society, November 7, 1932.

Differential Features of Yeast, Torula, Oidiomycosis and Coccidioid Granuloma (Modified from Stoddard and Cutler, and Shapiro and Neal) Classification by Charles A. McKendree and Leon H. Cornwall—Reprinted from Archives of Neurology and Psychiatry, August 1926, Vol. 16, pp. 167-181									
Genus	Reproduction	Sporulation	Mycelium	Sugars	Pathogenicity	Lesions	Pathologic Characteristics	Size of Organism, Microns	
BLASTOMYCETES	Saccaromycetes (true yeasts)	Buds	Ascospores present	Absent	Fermented	Skin	Necrosis; epithelial overgrowth; giant cells; abscess formation; polymorphonucleosis	1-13	
	Torula	Buds	Absent	Usually not fermented	Moderate	Nervous system; other organs to less extent; skin never	Chr. inflammation; caseation occasional; no polymorphonucleosis; gelatinous matrix	5-10	
	Monilia	Buds	Absent	Fermented	Moderate	Mucous membranes; mouth and gastro-intestinal tract; slight skin pigmentation	Chr. ulceration	3-30	
	Oidiomycosis	Buds	Present	Not fermented	Slight	Skin always; often bones, internal organs and brain	Necrosis; epithelial overgrowth; miliary abscesses; tubercle-like nodules; polymorphonucleosis; no gelatinous matrix	5-85	
FUNGI IMPERFECTI	Cocc. gr.	Never buds	Present with aerial hyphae	Not fermented	Marked	All organs; often skin	Nodules and cysts; giant cells; caseation; abscess formation; polymorphonucleosis; no gelatinous matrix		

reported have shown many of the subjective evidences of pulmonary tuberculosis: loss of weight, dyspnea on exertion, chills and fever, and evidence of infiltration of the lungs. Repeated examinations of sputum were negative for tubercle bacilli but showed quantities of monilia-like or yeast-like organisms. These patients all pursued more or less chronic courses, and roentgenologic examination showed evidence suggestive of pulmonary tuberculosis, although from the x-ray pictures in several instances they felt that a diagnosis of fungus infection could be made. The cases included in this eighteen showed mild and severe types of infection, the mild cases improving as a rule with several months of moderate illness, much as a mild case of pulmonary tuberculosis does, the severe cases going on through long periods of high temperature, hemoptysis, prostration, cough, dyspnea, and all evidences of a severe infection of the lungs.

They, like other observers, have remarked on how frequently extensive processes are found in the lungs both on physical and x-ray examination, while the patient remains apparently in a very passable condition of health.

Another interesting series described under the head of "bronchomycosis" is contained in a paper by Stokes, Kiser and Smith.²⁵ They report two cases, one occurring in Indianapolis and one in Baltimore. In both instances the subjective symptoms were strikingly the same, beginning with cough, dyspnea, and loss of weight. In one patient night sweats occurred and inability to lie down at night. These cases strongly resemble those reported by Stovall and Greely. The authors defined their organism as *Monilia albicans*. They felt also that repeated search for tubercle bacilli, with negative results, and the continued presence of these fungi in the sputum strongly suggested an etiologic relationship. They, as did Stovall and Greely, stressed the fact that sometimes repeated search is necessary for the discovery of this fungus.

While it is true that the involvements of this group of yeast fungus are mainly confined to the lungs, with, as we have seen, no necessarily fatal results to the skin, Hamilton Montgomery²⁶ calls attention to the fact

that this type of fungus, which buds and does not produce spores, may produce all the rapidly fatal effects of the *Coccidioides immitis*; and he says that in spite of the literature to the contrary the effects of these two classes of organisms on the human body are sometimes indistinguishable, one difference being, however, that *Coccidioides immitis* involves the lymph nodes—progressing through the lymph stream—and blastomycosis, as a rule, progresses through the blood stream. He describes a case occurring at the Mayo Clinic, with involvement of many tissues of the human body, including bones, lungs, and skin. The case, despite all forms of treatment, proceeded to rapid fatality within a few months after having been discovered. It was thought at first that spore-forming organisms would be found, but this they were unable to do; and the case was eventually diagnosed as one of systemic blastomycosis.

Brooksher²⁷ states that since 1895 the literature of the country has reported one hundred eleven cases of fungus infections of systemic or pulmonary types. Of these, the majority have occurred in the Central and Southern States, Chicago furnishing a large number of the reported cases. Among other reports upon the presence of these organisms in various parts of the human body is that of Lewis, Carroll and Stryker.²⁸ Childrey and New²⁹ in their descriptions of the disease call attention to the fact that the first case of systemic blastomycosis was described by Walker and Montgomery, and that Stover's subsequent series showed that it occurred more frequently in men than in women, thirty-four cases out of thirty-six of his cases being in men. They quote also the dictum of Howes and Morse to the effect that nine out of every ten cases of systemic blastomycosis die within a year, and Stover estimated that the duration of the illness until death varied from four months to two and one-half years.

These ideas, of course, have been profoundly modified by the publication of numbers of cases of blastomycosis involving the lung, with no tendency to rapid fatality. Other reports have been: Blastomycosis of the Eye, by S. Handford McKee³⁰; Blastomycosis of the Larynx, by Gordon B. New³¹ (with report of two cases); Blastomycosis of the Bladder, by B. W. Rhamy;³² Intra-

Ocular Blastomycosis, by Virgil J. Schwartz;³³ Blastomycosis of the Gingiva and Jaw, by Aubrey Crich.³⁴

It might be said that our outlook on cases of systemic blastomycosis is much more hopeful than it was ten or twelve years ago, and we are beginning to believe, just as the California observers are beginning to believe in reference to coccidioides granuloma, that in addition to the fatal cases which we see there are probably large numbers of cases of only moderate severity; that these patients go through a period of mild illness very frequently unrecognized—sometimes so mild that they do not even seek the service of a physician; that these mild illnesses disappear, and that immunity—by means which we do not understand—is established against the yeast fungus. Indeed it has been remarked that man possesses an immense immunity to yeast infection, as he is being brought in contact with it so frequently.

It is curious to note that a search of the literature so far fails to reveal a case of infection occurring either among bakers or brewers.

In 1915 the author³⁵ reported before the meeting of the Medical Association of the State of Alabama a series of cases under the heading "Systemic Blastomycosis in Jefferson County." In the light of what we know today these cases might better have been called cases of bronchomycosis. It is very evident from a review of the literature that a sharp distinction must be drawn between those cases of yeast infection which are confined solely to the lungs and those which invade the lungs and other tissues simultaneously. Against the first type of infection the human body appears to have an immense amount of resistance, and fatalities are not only infrequent but subsequent generalized involvement is infrequent also.

In the series to which we have alluded one case died after a stormy course of two months, with all the clinical evidences of a destructive process in both lungs, the sputum during this period consisting very largely of enormous quantities of budding yeast organisms, and the condition of the lungs on physical examination giving many of the evidences of acute miliary tuberculosis. With the exception of this fatality, the

other cases in the group—four in number—went on to complete recovery. These cases very closely resemble those reported by Stovall and Greely, and are entirely different from the cases in which there is combined involvement of the skin and the lungs also. It is this last type of case which has given us our high mortality rate, and which is undoubtedly the type referred to by Stover in his observations—cases strikingly similar to the first case of systemic blastomycosis as described by Montgomery and Walker thirty years ago.

It is rather an unusual fact that although these cases occurring in Jefferson County were described seventeen years ago, the only case of which we have knowledge reported in this vicinity since that time was that reported by Dr. Barfield Carter.³⁶ This latter was a true case of systemic blastomycosis with skin infections, lung involvement and a rapid fatality.

Monilia infections of the lung are usually chronic affairs not endangering life; but true systemic blastomycosis, involving both the skin and lungs, is a disease of an utterly different character. We might again call attention to the fact that the lung appears to have tremendous resistive qualities, not only to monilia infections, but even to infections by the *Coccidioides immitis*, as the majority of cases of coccidioidal granuloma which have gone on to recovery have apparently been instances in which the infection has been confined to the lungs themselves.

We feel a certain obligation in reporting these cases, as we cannot help but feel that they are of quite frequent occurrence. One of our two cases—with excellent reasons—was sent to a sanatorium for the treatment of a presumed tuberculosis; and we believe that this is the disposition most frequently used for cases of this type. The diagnosis of monilia infection of the lungs is surrounded with many difficulties, and we cannot be surprised at the skepticism with which this diagnosis is quite generally received. It is a fact too well-known for remark that yeast in human sputum is an extremely common occurrence; and only by judging the case as a whole and by repeated determination of their presence in the sputum are we able to decide that these organisms play a part in the disease which we are observing.

The following cases are reported:

Case No. 41046. A white female, age 28 years, was treated as a case of tuberculosis for a number of years before she was first admitted to the Employees' Hospital. During this time she spent over two years in various institutions for the treatment of tuberculosis. She presented a picture typical of this disease, suffering from productive cough, loss of weight, and continued temperature, reaching on most afternoons to 100°. During all this time repeated examinations of sputum were negative for tubercle bacilli. Frequent x-ray pictures of the chest showed what was regarded as extensive involvement of both lungs and that involvement was defined as one of long standing. The physical examination of her chest was in keeping with what is commonly found in a low grade chronic pulmonary tuberculosis. Our suspicions were excited regarding the case because we were unable to find tubercle bacilli, although they were looked for frequently. On one of her admissions to the hospital a determined search was made for fungus, with positive results. Repeated examinations of sputum collected while she was here showed large quantities of budding fungi which we believed to be monilia.

Case No. 66292. A white male, age 42 years, was admitted to the Employees' Hospital on April 9, 1931 with a history of repeated pulmonary hemorrhages which went back as far as 1928. He had also been treated as a case of pulmonary tuberculosis, although he had never been in a sanatorium for the treatment of this disease. X-ray plate on previous visit to the hospital made early in 1929 was interpreted as follows: "Process in both uppers has appearance of tuberculous involvement." Repeated chest plates were made with the same interpretation, the involvement being largely confined to the upper parts of both lungs; and despite the fact that the man expectorated on occasion large quantities of blood, examinations for tubercle bacilli were uniformly negative. His condition on the whole remained very much better than one would expect from even a moderate involvement of the chest. On one of his admissions to the hospital a thorough search was made for fungi in his sputum. Every specimen made thereafter was positive for this organism both by culture and in smear. We were able to identify in every specimen of sputum large quantities of budding fungi, which we believed to be of the monilia type. This man, without any long period of inactivity, has apparently made a satisfactory recovery from his infection.

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POSTOPERATIVE EMBOLISM*

JERRE WATSON, A. B., M. D.
Anniston, Alabama

Postoperative embolism is said to have shown a rather marked increase since the World War. While this statement is denied by some, it seems to be the opinion of the majority of those who have recorded their observations on the subject. Of course a tendency to increase would add greater interest to the subject. Regardless of the ratio of the present number of cases to those of the past, to those who have seen a case of fatal embolism in a patient expected to make an uneventful recovery the subject is one of momentous importance.

Postoperative embolism is only one phase of a general subject, its limitation being almost altogether one of causation. Its symptomatology, diagnosis and prognosis are the same as those of other varieties and often its etiology rests upon a constitutional condition which is common to the others. Embolism is the obstruction of some part of the vascular system and arrest of the circulation by a plug conveyed in the blood stream. The embolus, which is the obstructing body, may be either organic or inorganic material. A thrombus dislodged from its position becomes an embolus and an embolus, by deposit of coagulum, may become a thrombus. Consequently, a study of embolism becomes of necessity a study also of thrombosis.

As the originating focus of embolism, a thrombus is almost always located in a vein, although it may be of cardiac origin. Certain statistics indicate that in origin about 80% are venous and about 10% car-

diac. The veins from which emboli most often spring are the iliac, pelvic or femoral. Hence the frequency of embolism following operations in the abdomen and the pelvis, which are said to be responsible for about 70% of the cases. It seems to be particularly common following prostatectomies and hysterectomies for fibroid uteri, especially if complicated by carcinomata. Hernias, too, are responsible for a large number of cases.

Embolism on the other hand affects usually arteries and capillaries. However, retrograde emboli may be found in veins and lymphatics when the pressure becomes negative, as in the portal, the inferior vena cava and the pulmonary. The lymphatics which may exhibit negative pressure are those that are dilated and have an absence of valves. It is negative pressure which may occasion cerebral involvement following infections about the face, the angular artery sometimes sending blood toward the brain and sometimes away from it.

In the milder forms of embolism, the constitutional disturbances are so little and the local manifestations so slight as to render the diagnosis of the condition inconclusive or impossible. This fact is of particular interest to the surgeon because it probably accounts for a great many cases of postoperative bronchitis, pneumonia and other conditions which may complicate convalescence. If this be correct, it behooves the operator to exercise extreme care against the development of this condition in all operative procedures—even the very simple ones. The fact that emboli occur after the most simple operations is here emphasized because the attention of every physician who does even minor surgery should be directed to this subject. It is this factor which accounts, in part perhaps, for the danger associated with opening a boil about the face or scalp and the treatment of injuries to these parts. In the severer forms the symptoms are manifold and vary according to the nature of the embolus, whether septic, aseptic, or malignant, and to the vessel occluded and the organ involved. If such a vital organ as the lungs, heart or brain be involved, the symptoms are alarming and often fatal.

The experience that directly inspired the writing of this article, while derived from

*Read at a meeting of the Northeastern Division of the Association, Anniston, October 25, 1932.

an obstetric instead of a surgical case, well illustrates the grave form of embolism. The patient was a primipara, 27 years of age. She had been very faithful in visiting the office for prenatal examination and instruction. There was no illness during the pregnant period. The only discomfort complained of was moderate nausea and occasional vomiting during the beginning of the pregnancy and later, at irregular intervals, frontal headache and pain in the legs, right hip and right iliac area. There was moderate swelling of the lower extremities and vaginal tenderness accompanied by slight congestion of the mucosa and tenderness of the right vault. There was also tenderness in the right iliac area. The blood pressure showed a gradually slight increase from 108/68 in the beginning of the pregnancy to 126/76 at the end. No albumin was found at any time in the urine. Heart, lungs, and other organs were negative for evidences of pathology. Labor began August 18, 1931, at 9:00 A. M. and the patient was carried to the hospital about noon. Labor was slow and without complications till early the next morning when the patient suddenly developed severe pain in the chest, most marked in the upper right. Dyspnea began almost immediately accompanied by an increasing cyanosis, hyperpyrexia and tachycardia. The patient was conscious in the beginning and very apprehensive of impending death. Unconsciousness rapidly supervened. Delivery was terminated at once by means of forceps, being accomplished at 8:25 A. M., August 19. Death of pulmonary embolism occurred at 4:20 P. M. the same day without the patient's having regained consciousness.

This case has been briefly detailed to show how suddenly and fearfully the condition can develop. The site from which the embolus arose was undoubtedly pelvic, a frequent origin of fatal pulmonary embolism. It should be borne in mind that surgery of the pelvis is, proportionately, much more often followed by embolism than is childbirth.

Pulmonary embolism is not the only form that may complicate convalescence from surgery. This type occurs in from 1% to 2% of cases, in which manifestations of embolism present, and, in its fatal form, may be expected in every 2,000 to 4,000 op-

erations. But non-fatal embolism of the lungs or embolism of the other organs such as the brain, the heart, the liver, the kidneys, the mediastinum, the mesentery or the extremities may be expected in 1 out of every 10 operations. Probably many cases of postoperative pneumonia are really the result of septic emboli or embolic infarcts.

It should be remembered that emboli may be composed of bacteria, septic material, particles of tissue, fat cells from the ends of fractured bones, chorionic cells, carcinomatous cells, drugs introduced in intravenous medications, air, dust particles, etc.

The symptoms produced are pain, swelling, blanching or cyanosis, impairment of innervation, lowered temperature in the parts supplied by the occluded vessels and, of course, absence of pulsation in the involved artery. If the embolus is septic or is situated so as to prevent circulation in parts that may supply toxic material the temperature may be expected to rise alarmingly.

Certain conditions favor postoperative embolism:

1. Lowering of the metabolic rate
2. Slowing of the blood stream
3. Changes in the blood plasma or in the cellular elements of the blood
4. Myocardial impairment
5. Probable changes in the endothelial cells of the blood vessels or traumatization of blood vessels

It has been said that there is nothing that can be done about embolism, once it develops. This writer finds it difficult to agree with such a hopeless attitude in regard to any condition. The physician should always be hopeful and feel that he can be helpful. The fact that the patient recovers from the majority of embolic complications is in itself indisputable evidence that much can be done to favor recovery. The alarmingly serious cases do seem to be hopeless. Yet in this very type who knows but that rest, heat, fluids, stimulants and other judiciously applied supportive measures will not convert an apparently inevitably fatal case into one that recovers? In every case of embolism saline solution should be administered intravenously. The reasons for this are obvious.

It should be borne in mind that when the embolus is in an accessible vessel, e. g., the

femoral or the brachial or the iliac or, in otherwise hopeless cases, even the pulmonary, operation may be resorted to and the embolus removed. Only aseptic emboli should be subjected to operation and then only when the patient is young and free from general arterial disease. The opening into the artery should not be at the site of the embolus but, if possible, distal to it. In suturing the vessel wall, silk should be used so as to facilitate plugging the stitch holes by means of rapid clot formation.

However, the greatest achievement will be found in the field of prevention. After all he is the best surgeon who fortifies his patient against unfavorable developments, shields him against all things that endanger life or comfort, and gives to him the best chances of uninterrupted recovery following every operative procedure.

The method of preventing postoperative embolism is suggested by bearing in mind the nature of the condition and the aforementioned causes.

In patients suspected of lowered metabolism, Waltman Walters has suggested giving desiccated thyroid gland in tablets of 2 gr. each, three times daily, beginning as soon after the operation as they will be tolerated and continued till the patient is out of bed, but never longer than twelve days. If there is a marked rise of pulse rate and temperature, it is discontinued sooner.

Effort should be made in all cases to prevent slowing of the blood stream. The patient should be encouraged to move his body as much as practicable before operation and to practice forced deep breathing. The same should be continued after operation and the patient should be turned as in preventing hypostatic pneumonia in the bedridden senile patient. Daily elevation of the foot of the bed will bring gravity into play in helping empty dilated splanchnic vessels or varicose veins of the pelvis and lower extremities. Tight dressings should be avoided because they favor stasis by pressure and, in abdominal cases, unduly splint the abdomen and inhibit muscular action, diaphragmatic excursion and intestinal peristalsis. Varicose veins of the lower extremities should be encased in flannel or elastic bandages.

Changes in the composition of the blood should be combated by preventing an un-

due dissipation of body fluids prior to operations. To conserve these fluids, as well as for other reasons, giving a purgative 12 to 36 hours before operation is no longer regarded as good practice. A dehydrated patient should be given a preoperative infusion of appropriate fluids. Fluids should be given abundantly following operation, if necessary by resorting to proctoclysis, hypodermoclysis or intravenous infusion. Every means should be used to prevent inanition. Heat should be applied to the extremities.

The majority of these cases are among those from 50 to 70 years of age. In this class there are many cases of myocardial insufficiency and arteriosclerosis, both precursors of embolism. In these and other indicated cases the heart should be supported by judicious use of digitalis, caffeine or other cardiac stimulants.

At the time of operation local reaction should be overcome and contusion avoided as much as possible by gently handling all tissues. Violent retraction, mauling the tissues and unnecessary manipulation tend to damage the vessels, traumatize the tissues, delay union and favor embolism. Incisions should be made smoothly and mass ligations avoided. Yet hemostasis should be perfect and tissues accurately approximated.

Most, perhaps all, of the principles reiterated here are well known. They have been repeated because of their imperative importance. Observation of them will prevent many of the cases apparently making an uneventful recovery from developing unexpected complications or sudden deaths due to embolism, which usually occurs from the sixth to the tenth postoperative days.

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TOXEMIAS OF PREGNANCY*

IMMEDIATE AND DELAYED DANGERS

By
GILBERT F. DOUGLAS, M. D.
Birmingham

The subject I have chosen is neither a new one nor one which has not been replete with morbidity, mortality and great anxiety to the patient, the patient's relatives, and physicians. From an historical standpoint it is known that the more violent manifestations of the toxemias of pregnancy were recognized in the time of Hippocrates. As a matter of fact the word eclampsia is from the Greek, meaning "flash", which conveys the idea of a sudden onset. It was not until the beginning of the last century, however, that eclampsia superseded the more general designation of convulsions as an appellation descriptive of the principal symptoms associated with this complication of pregnancy.

Occasional references are found in Italian medical works of the Middle Ages, but it is not until the 18th century that well recognized descriptions of the toxemias of pregnancy are met with. It was thought by Burton that the stoppage of the menstrual "flux" or flow causing nausea, vomiting, loss of appetite, vertigo, pain in the stomach, shortness of breath and cough, was the cause of the toxemia. The following statement, as found in a treatise by Madame Le Boursier du Coudray, Chief Midwife of Paris, published in 1777, is interesting:

"It sometimes happens that a woman will have convulsions before she goes into labor. If such an accident happens, a competent doctor or surgeon should be called, as the condition is dangerous to both mother and child, and a careful examination should be made to find out just how they are doing. While awaiting this assistance, the patient should be bathed with pure water, and care should be taken that none be allowed to touch her face or her throat, as this will increase the violence of the convulsions as will likewise spiritous liquors."

There is much written in historical medicine relative to this horrible disease. I mention this in order that we might be reminded of the recognition of these tragic symptoms many, many centuries ago. It is rather discouraging for us to be compelled

to admit that we have made no noteworthy advances except in a better knowledge of the associated pathology, of the chemistry of the urine, and, more recently, the chemistry of the blood.

ETIOLOGY AND SYMPTOMATOLOGY

It would be a most difficult matter to discuss the etiologic factors underlying the production of the so-called toxemias of pregnancy from any one point of view since it is now well known that the most divergent clinical manifestations may be accompanied by similar pathologic features. For example, in the later months of pregnancy, death may be the terminal manifestation of a series of symptoms marked by one or more convulsive seizures and may also constitute the final picture in a case in which no convulsions have occurred. Autopsies in each instance show practically the same pathologic lesions in the brain, kidneys and other organs.

Under the general heading of toxemias of pregnancy we might discuss: (a) pernicious vomiting, (b) acute yellow atrophy of the liver, (c) nephritic toxemia, (d) pre-eclamptic toxemia, (e) eclampsia, and (f) presumable toxemias.

(a) Pernicious vomiting is found in a greater or less degree in over one-half of the cases, beginning as a rule at the end of the first month and continuing until the third or fourth month. It is usually recognized and thought of as "morning sickness", a term known to all pregnant women. The variation in degree ranges from slight discomfort to inability to leave the bed. In some instances scarcely any food can be retained.

The toxic element is most probably the greatest cause in the majority of cases of hyperemesis. In true toxemic cases there is an evident disturbance of the blood and urine upon which a diagnosis may be based.

Williams¹ was the first to show that the high ammonia coefficient in women indicated that a larger proportion than usual of nitrogen was excreted in the form of ammonia. Normally the ammonia coefficient varies between 4 and 5%, but in toxemic vomiting it may rise to 20% and range as high as 50%.

*Read at a meeting of the Walker County Medical Society, Jasper, March 10, 1933.

1. Quoted from George W. Kosmack: *Toxemias of Pregnancy in Gynecological and Obstetrical Monographs*, 1922. D. Appleton and Co.

Serious liver necrosis can be associated with hyperemesis. The lesions found in the kidneys of patients dying from hyperemesis show degenerative changes in the convoluted tubules, including necrosis of the epithelium of the kidney.

(b) The cause of acute yellow atrophy of the liver occurring in pregnancy is probably associated with the same series of deviations from the normal that underlie the other and better known varieties of toxemias of pregnancy. Whether to regard acute yellow atrophy of the liver as a clinical entity or as a terminal lesion in any given case of hyperemesis is a decision that cannot be made without a knowledge of its cause. A predisposing cause may be found such as pernicious vomiting, sepsis, eclampsia, typhoid fever, drug poisoning, or intestinal auto-intoxication. Collections of cases of acute yellow atrophy of the liver show that where it is found among women anywhere from 50 to 60 per cent are pregnant or have been delivered.

Jaundice may occur in pregnancy as an accidental symptom. It may be of the catarrhal variety or may be due to cholecystitis or to stones in the gallbladder. Every case of persistent icterus occurring in pregnancy may be regarded with apprehension. The theory of bacterial origin has been advanced and both the streptococcus and colon bacillus have been isolated from the liver at autopsy.

(c) The overburdening of the maternal kidney function during pregnancy undoubtedly serves as a starting point for the frequent disorder to which the term "kidney of pregnancy" has been applied. Nephritis has been traced to exanthemata which may undergo an exacerbation after years of quiescence. The mere presence of albumin is not necessarily an indication of nephritis as this may appear in small quantities in urine of perfectly healthy people, and especially after exercise.

Some of the symptoms met with in nephritis, in addition to the urinary findings, are edema or swelling of the legs and puffiness and swelling of the hands. In certain cases headache, nausea, indigestion and slight visual disturbances are present. Increased blood pressure is found in most cases. Functional kidney tests show that the excretory possibilities for water and

salt are considerably reduced. This would point to a retention of these materials in the organism with consequent ill effects.

(d) It is difficult to draw a distinction between nephritis and toxemia and that to which the term pre-eclamptic toxemia has been given. Most cases are probably better labelled by the latter term. The clinical signs and symptoms show a marked resemblance to that class in which the kidney alone seems to play a leading part.

Pre-eclamptic toxemia usually comes on between the 7th and 9th months and may be associated with a varied train of symptoms. The milder cases are characterized by headache, malaise, high blood pressure, and more or less edema of the extremities. In more severe cases pain in the epigastrium, persistent headache, visual disturbances (spots before the eyes, inability to read), or attacks of dizziness are present. A characteristic feature of this condition is the reduction in the amount of urine excreted, which may be as low as ten to fifteen ounces in twenty-four hours, and which contains albumin, casts and sometimes blood cells.

(e) Eclampsia: This term is limited to the acute manifestations of toxemia during the latter half of pregnancy. There usually are convulsive seizures, after or between which there is loss of consciousness. The term eclampsia is in a sense a misnomer since it is found that in some instances coma and death ensue without previous convulsions. Eclampsia constitutes one of the most serious complications of pregnancy, and a great deal of time has been given to the study of its causes.

The predisposing causes, however, are now much better understood and through prophylaxis a great deal has been accomplished in reducing its incidence and mortality, even though the degree of improvement in its treatment has not been so great. The frequency of occurrence of eclampsia has been variously estimated and different hospitals show considerable variation. There should never be a let up in endeavor to reduce the percentage.

Primiparae are more apt to be affected by eclampsia than multiparae. Both multiple pregnancies and hydramnios are generally assumed to be predisposing factors. Although associated with the later months of

pregnancy, it is found at times in the 4th and 5th months. Cold damp weather, such as is often met with in the eastern United States in the early spring, is attended by an increase of eclampsia.

Until recent years the mortality was high, being estimated at from 25 to 33 per cent (and even more) for the mother, and at 33 to 60 per cent for the child. Lately there has been some reduction in these percentages.

In a difficult case of eclampsia the symptoms are so characteristic that they constitute a well marked clinical picture which may be briefly described as follows: Premonitory symptoms, including malaise, headaches—either frontal or occipital—puffiness of the hands, distinct edema of the ankles and lower abdomen, and visual disturbances, including spots before the eyes, blurred vision and transitory attacks of blindness, often precede the attack by varying periods of time. Immediately before the seizure there may be an irregular abdominal pain, frequently localizing itself in the epigastrium, nervousness, restlessness and visual disturbances.

Eclampsia in the puerperium may develop at different periods after delivery, but as a rule they come on within a few hours. They may be delayed for some weeks unless the toxins have been eliminated. Increased blood pressure is present as a rule in eclamptic conditions, but not uniformly so. A patient with pressure of more than 130 should be watched closely. A blood pressure remaining at 150 to 160 should be looked on with grave significance.

The urine in eclampsia shows a high percentage of albumin as a rule and boils almost solid. Hyaline, granular and, often, blood casts are present. The specific gravity is high, and the acidity marked. The kidneys should be closely watched in all of these cases for the frequency of renal infection in pregnancy is not fully appreciated. A hematogenous infection may result from colon bacilli. Further, poor drainage may be present due to pressure on the ureters.

In a study of eclamptic seizures it is necessary to differentiate them from true epilepsy. The points of difference might be given as follows: There is a history of seizures at times other than during gesta-

tion. Also, recovery without coma is rapid. When there are urinary signs of toxemia, the seizures extend over a prolonged period.

Eclampsia must also be differentiated from hysterical and cerebral convulsions. As a rule, they may be distinguished from convulsions of a toxic character by the urinary findings, by the existence of consciousness, and the absence of cyanosis. There is no tendency to lacerate the tongue.

The prognosis in toxemias of pregnancy with moderately severe vomiting is good as long as nutritional balance is maintained, as long as no loss of body weight results, and if the patient is able to be up a good part of the day without showing urinary evidences of acidosis. If there is incessant nausea and vomiting accompanied by loss of weight and strength or if the vomitus contains coffee ground material, denoting hemorrhages from mucous membranes the outlook is serious, even if an abortion is finally accomplished.

In the presence of acute yellow atrophy of the liver, the prognosis is invariably bad, and in nephritic toxemia only a prompt response to treatment should give other than a guarded prognosis.

Where blood pressure is elevated during pregnancy, the patient should be followed very closely, the kidneys studied at frequent intervals, and kidney function estimated.

PATHOLOGY

In mentioning pathology, I do so to impress the necessity of a careful study of all cases from a pathologic standpoint; if we will accept these symptoms as "A red light on life's highways", denoting danger ahead, more lives can be saved.

For a long time the urinary changes have been looked on with great apprehension and now more recently in the study of blood chemistry many very helpful findings have been made.

(a) Hyperemesis: In this condition it is necessary to study the liver for changes which might be of fetal origin. Lesions have been found in the kidneys ranging from a simple exudate to a severe parenchymatous nephritis. Hemorrhages into the serous cavities and membranes have been observed in isolated cases and bleed-

ing between the uterine wall and the fetal membranes is also found.

(b) In acute yellow atrophy of the liver, the patient should be studied closely to determine if possible whether the condition is primary or secondary.

(c) Nephritic and Pre-Eclamptic Toxemias: When the albumin increases to one per cent or more and is associated with casts, particularly of the granular variety, a true kidney involvement may be suspected.

Functional kidney tests have been introduced to throw light upon the pathologic physiology. It has been found that normal kidneys in pregnancy excrete water, sodium chloride and nitrogen unchanged.

(d) Renal lesions found in eclampsia have not been productive of any final opinion which might definitely establish the etiology of the condition.

Hemorrhages may take place in the lungs, pleura, pericardium, cranial cavity, brain, gastric mucosa and skin during an eclamptic period.

Cerebral edema is often quite marked in these eclamptics.

URINARY ANALYSIS AND BLOOD STUDY

The amount of urine voided in pregnancy, from 900 to 1,500 cc. or 2 to 3 pints in 24 hours, does not vary from the non-pregnant state.

In considering albumin and casts it is understood that about 60 per cent of pregnant women show albumin in the urine at some time, though there may be a trace only. Albumin without casts or large amounts of albumin with very few hyaline casts is more apt to be a finding in pregnancy than one of the non-pregnant state.

Acetone is apt to be present in the urine in the cases of toxemias of pregnancy. Where possible to have laboratory work done, an estimate should be made of the acetone bodies.

The study of blood chemistry has added a great deal to the diagnosis and has been of great aid in the treatment of these conditions.

PREVENTION

No word means quite so much in obstetrics as the word prevention. Truly we have to study the pregnant patient from the very earliest possible date that we can get her

under supervision. This means a complete physical examination with at least the more common laboratory examinations of the urine, and, if possible, of the blood. Thus is it possible to determine the condition of the patient's kidneys and amount of her reserve strength.

Certainly every pregnant patient should have her blood pressure checked. A urinalysis should be made at least once a month up to the 7th month. During the last 2 months there should be some contact in order that the condition of the patient may be known each week. When possible urine should be obtained and blood pressure taken at these intervals.

If the blood pressure is above 130, the patient should be kept under close supervision; if it runs from 150 to 160 she should be put to bed and a complete urinalysis made. A blood chemistry study in such case may prove helpful.

If pre-eclamptic symptoms develop, the patient should be in a hospital; if she is unable to do this, then someone should remain with her until symptoms have cleared.

TREATMENT

In a consideration of the treatment of toxemias of pregnancy, it should be remembered that the causes to be dealt with are numerous. We have to *treat our patient* instead of a simple toxemia alone: it is easy to be misled on hypothetical or theoretical methods of treatment while our patient dies in the meantime for want of attention.

In the treatment of eclampsia or convulsions, the patient should be hospitalized and the bowels evacuated. She should be given magnesium sulphate by mouth, and intravenously every 2 to 4 hours until the convulsions have been controlled. In conjunction with this, morphine sulphate, gr. $\frac{1}{4}$ to $\frac{1}{2}$, should be given every 2 to 4 hours to keep the patient quiet. Sodium amytal is beneficial and possibly gives greater relief than most other sedatives. Bromides, chloral and veratrum may be given.

If the patient is seen in convulsions or coma, a catheterized specimen of urine should be procured to see if the condition is one of true eclampsia, epilepsy or diabetic coma.

Reference has not been made to the more radical treatment—cesarean section. Cer-

tainly there are some cases in which this is indicated, but the pendulum has swung back to more conservative treatment. In the long run more mothers and babies are being saved than formerly when cesareans were done more frequently for eclampsias.

We have been discussing immediate dangers of toxemias of pregnancy. There are also delayed dangers which I merely mention since it is hardly necessary to refer to the crippled hearts, the incapacitated kidneys, the disturbed eyes and the generally debilitated patients who experience ill health for long periods of time.

Finally, to be good obstetricians we should endeavor to be good doctors. We should appreciate the fact that if the case is worth handling at all it is worthy of our best, regardless of what remuneration we may receive from it.

There is no adage more correct in obstetrics than the old one: "An ounce of prevention is worth a pound of cure."

1111 So. 20th St.

Paget's Disease of the Nipple—Paget was the prophet who did not live to realize the truth of his prophecy. Some eighty years ago he described a condition of the nipple in which the nipple was replaced by an ulcer and the breast indurated. These women told Paget that they had first noticed some irritation of the nipple with redness and itching, and the nipple became covered with scabs. There were two prominent types—the red, granular nipple, and the nipple covered with a scab. It makes no difference; every one of the women knew she had an irritation of the nipple, but she paid no attention to it, or, if she consulted a doctor he paid no attention to it. The condition was usually called eczema. But when the nipple had ulcerated and the breast had become hard, then these women thought it was "ripe enough" to consult a surgeon. As far as I can find out Paget's disease as described by Paget, has never been cured by the most complete surgery, with and without irradiation, or whether the irradiation preceded or followed the operation. In 1924, in the Archives of Surgery, I presented my entire experience with Paget's disease. Fortunately, at that time I had observed some cases of the little things described by Paget. Some of these, when operated on, proved to be benign and the patient lived. Others were cured

without operation by a simple remedy suggested by Paget. Today, nine years later, we have further evidence to confirm all the statements made in the paper of 1924. Every woman should know, and the time to teach her is in the postnatal period, and all young and old women should be informed by the medical profession and public health departments through the press and in the school books on preventive medicine, that any neglected irritation of the nipple when nursing a child is apt to lead to a mastitis or infection of the breast which may produce an abscess. The same neglected irritation of the nipple, while not nursing a child, may lead to cancer as first described by Paget. The nipple is no different from the skin, except it is more difficult to clean, and still more so when the nipple is retracted.

It is my rule, if the irritation of the nipple is of short duration, to try the protecting treatment for two or three weeks. The nurse teaches the patient the technic. After the vaseline is put on the nipple, a small square piece of gauze covers the nipple and is fixed with adhesive straps. If the irritation does not disappear, or on first examination, it is suspicious that it has reached a stage from which we can not expect recovery by simple means, the patient is admitted to the hospital and prepared for the complete operation for cancer. Then the nipple and the areola with a small zone of skin are excised under local anesthesia with a cone of breast tissue beneath. Frozen sections are made of the irritated area of the nipple, and a number of sections are made of the ducts and breast tissue beneath. If the picture indicates benignancy, nothing more is done and the wound is closed. If there is any evidence of malignancy in the nipple or ducts, the complete operation for cancer is performed.

In the first ten years, up to 1900, we observed Paget's cancer of the nipple only in the late stages. My paper in 1924 records the beginning of the less malignant cases in which the cancer is confined only to the nipple, and then, later the beginning of the benign lesion, and then a few cases cured without operation. Today, among the cases observed by us, no-operation cases predominate; next those in which only the nipple is excised. Paget's cancer of the nipple is becoming very rare among all classes of women.

A physician should always see any skin defect, like a wart or a mole, whether pigmented or not, or a nodule, whether in or beneath the skin, to decide whether it should be removed at once or left alone until it gets larger.—*Bloodgood, New Orleans M. and S. J., June 1933.*

THE JOURNAL

OF THE

Medical Association of the State of Alabama

Editor-In-Chief

FRED W. WILKERSONMontgomery

Associate Editors

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J. N. BAKER.....Montgomery

DOUGLAS L. CANNON.....Montgomery

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent.

Office of Publication

519 Dexter Avenue.....Montgomery, Ala

Subscription Price.....\$3.00 Per Year

June 1933

WHAT CAUSES CANCER?

How often is this query put to the physician by his confiding patients!

The reply, as yet, must be uncertain, vague and circumspect. That this hidden secret of nature will be eventually dragged out into the open as a result of scientific delvings, no one doubts; but how soon no one can foretell. In the meanwhile, each new scintilla of evidence adds a fresh ray of hope. Interesting in this connection is the recent experimental work on guinea pigs done by Glover and Engle and emanating from the National Institute of Health in Washington. These workers were able to produce metastatic malignancy in a guinea pig by inoculation with a culture containing a spore-bearing microorganism, which was isolated, on special medium, from the tissue of a microscopically proved carcinoma of a human breast. The microorganism was again recovered from the malignant tissue removed from the animal. Four months after inoculation, the animal was killed, and, after careful autopsy and microscopical study, the diagnosis was made of malignant adenoma with metastases in lymph nodes, omentum and kidneys. The comment of these experimenters is as follows:

"The new growth has apparently arisen in breast tissue, resembles lactating mammary acini in histologic structure, and is identical in structure in the primary and in the various metastatic masses. In the invasion and destruction of muscular tissue and in the production of distant metastases it fulfills two of the criteria of malignancy. Differentiation appears to be of high grade; anaplasia, conversely, slight."

Such labor is not in vain; it may not be given to the plodders of our own generation to find the answer to this riddle but the lucky one who does stumble into the answer will find that his trail has been blazed by those who have gone before.

THE PRACTITIONER AND PUBLIC HEALTH

The problems of public health are the concern of every physician in the commonwealth, perhaps more so now than at any other time during the century. Sixty years ago Jerome Cochran¹ conceived a system that would unite the practitioners of this State into an efficient health organization. Upon a firm foundation the originator of The Medical Association of the State of Alabama erected his structure. Later when the edifice was threatened by internal dissensions and insidious outside influences, the wisdom and leadership of our second health officer, Dr. W. H. Sanders, stopped the erosions. The third caretaker, Dr. Samuel W. Welch, strengthened and handed to us unsullied our enriched inheritance. To these three men the people of Alabama should feel indebted for this model health organization.

The health of the State is but a composite of the health of each individual community. Our founder was cognizant of this fact when he made the local county medical society the unit responsible for the administration of health measures in its locality. Most counties have a health officer as an executive but upon each member of the medical profession rests the success or failure of his efforts. Dr. J. N. Baker² out-

1. Sanders, W. H.: The History, Philosophy and Fruits of Medical Organization in Alabama. Trans. M. A. S. A. 1914.

2. Baker, J. N.: The Program of a County Health Department. J. M. A. Alabama 1: 174-175, October '31.

lines the program of a county health unit as follows: (1) one hundred per cent disposal of excreta; (2) one hundred per cent public intelligence of the public health program; (3) equality of opportunity for health as well as education for every child of school age; (4) prompt reporting of communicable disease; and (5) complete and accurate registration of births and deaths. There can be nothing but approval of this plan.

Teaching is the inherent responsibility of every doctor, as even the name is derived from the Latin and means "teacher". No better field for teaching can be found than in preventive medicine; and no work will pay larger dividends to the teacher and pupil. Many practitioners employ different methods for the dissemination of health ideals but the most fertile ground will be found among the children of the community. The child will also carry the lesson with him into adulthood. If the children are to be given a comprehensive program, the aid of the neighborhood physicians must be enlisted. The county health officer cannot examine each child personally; and the delegation of this task to the nurse and pedagogue gives the child and parent a false sense of security in the face of incomplete investigations by untrained hands. Under ideal conditions the examination should include not only inspection of the skin, eyes, nose, throat and teeth but also an examination of the heart, lungs and abdomen. The hearing and sight likewise should be tested for gross variations; and in all cases the feces should be examined for hookworm. The last is of particular importance in the rural sections and smaller towns.

If possible, especially in the lower grades, one of the parents of the child should be present at the time of the examination. The importance of the examination can be emphasized, the various defects pointed out and if vaccination or inoculation is necessary permission can be obtained before negative arguments can be advanced by neighbor or child, the treatment being given on the spot without delay. The colored pupils should not be slighted as they are very apt when taught health methods. Health talks can be given to the local Parent-Teacher Association and other interested groups; and if the "Blue Ribbon Contest" or some such

plan can be carried out, as was done in Tennessee by the Commonwealth Fund, greater interest will be manifested. The practitioner who enters whole-heartedly into this work will gain the confidence of every child in the community and extend the usefulness of the health department.

Each year in most counties campaigns are carried out for the purpose of inoculating the inhabitants against diphtheria and typhoid. Due to the suspicion that many of the recipients are not actually unable to pay for this service, there is at times some criticism among doctors. In the State of Virginia,³ for instance, 55,169 toxin-antitoxin treatments were ordered by the physicians in a single year. Some of the doctors found that the fee allowed by the State was too small to compensate them for the work entailed and were glad to let the health authorities take charge of the treatments, while others were well pleased with the arrangement. Other states are using similar methods of public health program co-operation in other phases of public health work. The practitioner should take full advantage of this trend, whereas the public health official should be most patient and careful to extend to the family practitioner an opportunity to take part in every public health activity which could be construed as encroaching upon the practice of medicine.

Public health is too stupendous an undertaking for any small group to accomplish its purpose without the public and practitioners' aid. Mutual cooperation should be the aim. Jerome Cochran realized this when he wrote the constitution of the Medical Association and the legislature realized this when the plan of organization was approved. The private physician must individually accept the challenge and enlist for service in carrying out the public health program whenever the opportunity is presented. His aid is indispensable.

M. E. S.

3. Emerson, Kendall: The Practicing Physician and the Public Health. South. M. J. 26: 31-36, Jan. '33.

NEXT ANNUAL MEETING
BIRMINGHAM
APRIL 17-19, 1934

RECRUDESCENCE OR INFECTION?

For decades the viewpoint has been widely held that adult tuberculosis is a reinfection or a recrudescence of a tuberculous process acquired in childhood and which has hitherto been held in check by the resistance of the host. It was believed by many observers that the incidence of tuberculosis among doctors, nurses, and relatives of patients was no greater than in persons not so exposed.

For several years past this contention has been increasingly challenged and now many students are beginning to abandon it altogether. The more recent studies apparently indicate that adult tuberculosis arises "from outside contacts, rather than from old latent tubercles within, as the source of infection".¹ In support of this it is stated that where the husband or wife has active tuberculosis the mate is infected from five to nine times as often as persons not in contact with the disease. This is especially true in cases in which one partner has constantly positive sputum. Among college students many cases are now being traced to outside contacts also.

But, regardless of which school of thought is correct, another factor may be expected to play a steadily increasing part from now on. Every one is agreed that malnutrition is always a party to the spread of the white plague. And now that undernourishment and even starvation are widespread, it is not unreasonable to fear that the death rate from tuberculosis may cease its downward course and begin mounting once more.

It is to be much regretted that, because of the distressed condition of the State's finances, the chest clinics operated by the State Board of Health and which were doing such a commendable work in case finding have had to be temporarily suspended. In the absence of this helpful and stimulating agency, it behooves every practicing physician to be more acutely alert than ever in attempting to recognize and to accurately diagnose those early cases which may fall into his hands. It is important, too, in this connection, to see that all cases of tuberculosis, both early and late, are promptly reported.

W. W.

1. The Source of Infection in Adult Tuberculosis, Ed. J. A. M. A. Apr. 15, '33.

MEDICAL SERVICE IN REFORESTATION CAMPS

(A. M. A. Bulletin, April 1933)

The Surgeon General of the United States Army charged with the duty of organizing the necessary medical service for the members of the recently established civilian Conservation Corps, is asking for applications from qualified physicians who desire to participate in that service. Officers of the Medical Reserve Corps of the rank of Captain or Lieutenant and other physicians who wish to be identified with this movement—in forestry camps or Army posts—should make application to the Commanding General of the Corps area in which they reside.

Information available is to the effect that 538 conservation work camps will be immediately established in twelve western states and that nearly 110,000 men will be assigned to duty in those camps. In the Eastern section of the country about 10,000 men will be encamped.

Medical personnel will be assigned at the rate of one Captain and two Lieutenants of the Medical Reserve Corps for each thousand men. In those areas in which the camp units are widely separated contract surgeons will be assigned on a part time basis, at an average compensation of \$125 per month. Two men in each unit will be trained in first aid and in sanitary inspection work.

Hospital service will be supplied for men in the camps in need of such service because of illness or disabilities contracted in line of duty during the period of encampment. Government hospitals will be used if located near the camps; otherwise the facilities of civilian hospitals will be utilized.

Medical service to be provided includes thorough physical examinations, vaccination against smallpox, typhoid-paratyphoid immunization, and outpatient and hospital treatment. It is expected that several hundred physicians in civil life will be brought into service, either as officers of the Medical Reserve Corps or in the capacity designated by army rules as contract surgeons.

It is understood that approximately 250,000 men will be enrolled for camp duty through the U. S. Department of Labor.

THE ASSOCIATION FORUM

(Under this heading will appear, from time to time, as occasion may arise, contributions having a direct bearing on the general policies, functions and interests of the Association. Articles submitted should be of an impersonal nature.)

THE HEALTH DEPARTMENT AS POLICEMAN

J. N. Baker, M. D.,
State Health Officer

In these modernistic, technological times, one is prone to visualize his health department not as a blue-coated, brass-buttoned officer of the law, armed with a billy, but rather as a white-frocked, keen-eyed, inquisitive individual equipped with a microscope, Petri dishes and test tubes. In the days of long ago, when serums and vaccines were unknown and unsung and contagion and pestilence ran rife, man's only means of safety lay either in flight or by invoking the aid of the law through its police powers. It was largely through these means that quarantines, set up for the control of yellow fever, smallpox and such other unwelcomed but frequent visitors, derived authority to cope with these situations. In the State's present financial embarrassment, it now appears that the preservation of a bare skeleton for the health department revolves about the legal interpretation of just how much authority is vested, by law, in us in the use of the billy.

The organized medical profession, that is, The Medical Association of the State of Alabama, is the duly constituted State Board of Health for Alabama. This makes every reputable, licensed physician in the State a real and essential part of its health machinery and likewise serves to explain the serious and earnest manner in which the Association received, on the last day of its recent annual meeting, the report of the Board of Censors depicting the embarrassed financial plight of the health department. The State's revenues, like the individual's financial income, have shrunk to such point that the several amounts previously allotted by the legislature for the conduct of the various departments of the State, seemed no longer available, and the head of the health department was notified by the Comptroller that during the remainder of the six months of the present fiscal

year but a small portion of the appropriation for health would be available. This decision resulted from the provisions of the Budget and Financial Control Act, whereby such monies as flow into the general fund must be prorated among those financed from this fund. With these facts before it, the Board, after mature deliberation, adopted the following resolution which was also approved by the Association:

"In view of the financial crisis now confronting the Health Department of this State, and wishing to encourage the State Health Officer in his efforts toward economy, and at the same time to comply with the laws of this State, this Board instructs the State Health Officer to immediately discontinue all activities not coming within the police powers of this department."

Faced with this dilemma, the Comptroller appealed to the Attorney General for a ruling to define concisely the fundamental and essential functions of government which should be preserved, having due regard for the basic police powers vested in each department. The opinion of the Attorney General furnishes interesting and instructive reading and is given below:

State Finances

Opinion by the Attorney General

The essential functions of government are the protection of life, liberty and property; the orderly settlement of disputes between the subjects by courts properly constituted; the suppression of domestic disorders and the repelling of foreign invasions; and also the punishment of crime and punishment for the violation of statutes regulating human conduct. These essentials of government contemplate, first, a Legislature, to make laws for the regulation of the people and the enjoyment of their personal and property rights, in order that we may have a government of laws and not of men. Second, that we have an executive department as defined by the Constitution, with authority to execute the laws and a sufficient number of sheriffs, peace officers and militia to enforce the laws and to carry out the mandates of the laws, and the decrees and judgments of that other primarily essential branch of government, the judiciary.

It also follows that in order that effect may be given to the functioning of the three above men-

tioned branches of government, the State maintain a system of penal and correctional institutions.

It is apparent that if the payment of the expenses of any of the three departments of government above mentioned are to be postponed, it must be the expenses of the executive department which engages in various activities while ordinarily regarded as necessary, but which in an emergency, must be postponed to more essential functions of the different departments.

Of course the expenses of the legislative department of government must be defrayed out of the general fund of the State. Of course expenses of the judiciary must be defrayed out of the general fund of the State. Of course the expenses incurred on account of the activities of the executive department of government must be paid out of the general fund, where some other fund has not been provided for this purpose, in order of their importance. Having determined that to have government, we must have a legislature and a judiciary, it is likewise significant that we must have an executive arm of the government. It would be impossible for the three coordinate branches of government, the legislative, executive and judicial, to function without each other, but it occurs to the writer that in the executive activities, or what are generally considered as executive acts of the government, certain non-essentials may be postponed to the carrying out of the general purpose of our system. In my opinion there must be a chief executive of the State; a revenue collecting agency of the State, and an agency to keep the revenue, and an agency to distribute the revenue. Also there must in conjunction with the effective functioning of the executive, legislative and judicial branches of government be maintained a system of police regulations, including the State militia, sheriffs and other police officers whose duties are to enforce both the mandates of the legislature and the orders and decrees of courts.

Then of necessity the State engages in certain activities which are not prohibited by the Constitution, but naturally flow from an expression of our theory of government as for instance, public health work of the State, and the activities of other institutions which are charged with the care and maintenance of the unfortunates of life, persons mentally deranged, persons afflicted, and persons who come into this life with no control or opportunity to control, their situation in life; our institutions for the insane and our institutions which are maintained for the purpose of giving to such persons as those who are born without sight, hearing or speech, some opportunity; and those institutions to whose care is confided by our courts the children of our State, under certain circumstances. These things inure to the public welfare and in the performance of such functions the State is performing a police power of the highest character. Naturally when persons are involuntarily incarcerated by this State, they must be housed, clothed and fed. Of course persons committed to our penal institutions, corrective institutions and our asylums are involuntarily incarcerated. Our statutes very wisely provide that those unfortunates who are born without the senses of a normal per-

son shall be committed to an institution such as the institution for deaf and blind.

The above enumerated functions of our State I conceive to be not gratuitous activities of the State, but the performance of a duty which is necessary for the benefit of all of our people.

There are certain other departments of the State government which from the information before me, are charged with the collection of fees and commissions on which such departments operate. It would be unwise to curtail the activities of these departments of government which are performing a service for the people so long as they operate on the fees and commissions collected by them. So long as their services are useful, the collection by these departments of fees and commissions does not affect the financial condition of the State Government, and the State would be very much in its own light if it did not accord to the people these useful services when they do not affect adversely the running of the essential departments of government. Among such departments I might mention, are, the Agricultural Department, the Public Service Commission, the Commission of Game and Fisheries, the State Fire Marshal, the Insurance Department, the State Forestry Commission, and other such agencies of the government. In most instances these departments supply monies for the general fund of the State over and above their running expenses.

What has been said heretofore has been with regard only to the use of the so-called general fund of the State. Several of our departments operate in part or in whole out of funds set aside, either by Act of the Legislature or by provision of our Constitution from separate funds which are to be used for no other purpose than those of the trust which has been by statute or Constitution, established.

While what has been said heretofore has regarded only the payment out of the general fund of the State, but it must be borne in mind that the Chief Executive, the tax collecting agency and other parts of the executive department, such as the Treasurer, Auditor, Comptroller, Legal Department, and even the Courts and the Legislature are necessary cogs in the administration of all activities of the State government and when funds are used to defray such expenses as the collection of revenue dedicated to a particular purpose, and the administration of the same, there is no diversion of such funds from the purposes specified in the Constitution and by statute. Of course the interest on the legitimate public debt should take preference over the gratuitous functions of government. There are other activities of government that possibly should be mentioned. Also I regard as a necessary activity of the State Government the preservation of the records of the State.

Secondary to those things which we have observed to be necessary to government, might be the State's activity in cataloguing its resources for from this the State is better able to acquire revenue.

I regard, however, the State's activity in education and in road building and maintenance of its port as closely akin to those functions of the State which in the performance of its police powers of

government, we have come to regard as a necessity at the present time. These departments of our State Government operate on the funds specifically dedicated by constitutional provision and by Acts of the Legislature. It is to be hoped that the general fund of the State will never become so depleted in defraying the expenses of the essential functions of government as that special funds will ever have to be used for the purpose of defraying a part of the expenses of those other departments of Government, which are necessary cogs in the machine of all activities.

It might be well to observe, however, that an educational department, a docks commission, a highway department and an agricultural department, the public service commission, nor any other department or commission of the government can operate without a Governor, a collection agency, an auditor, legal department, and treasurer. Each department of government which operates on a specific trust fund dedicated to a particular purpose should out of such fund defray the expenses of the operation of that department before expecting its expenses to be paid from the general fund of the State. It also might be well to add that the head of each department should determine in the event the expenses of the operation of that department cannot be met in full out of a trust fund or out of the general fund, what is the most essential with a view to continuing and conserving an organization.

Throughout the health laws to be found in the Code, the police powers vested in the health department are many and comprehensive in scope, and it is upon this legal basis that the skeletonized force preserved has been founded. Translated into practical, workable terms this means that certain of our activities are basic and essential for the welfare of the people, such as the guarding of water, milk and food supplies, sewage disposal and sanitation, rigid control of epidemics and communicable diseases and the keeping of vital, mortuary and morbidity records. In the application of modern scientific methods of control, laboratory facilities at certain strategic points throughout the State are quite necessary, and every effort is being made to preserve as much as possible of this service. On the other hand, certain other of our activities which had been studiously and carefully planned to bring an added element of security to our people, and which, in essence, had proven to be eminently worth while, if not, indeed, primarily essential, have had to be discontinued. Among these are the venereal disease control program (including the discontinuance of free drugs), the diagnostic and consultative chest clinics, the Division of Oral Hygiene and the Bu-

reau of Nursing. In addition, the activities formerly conducted in malaria control and rural sanitation have been brought to a bare minimum. The special appropriation of \$30,000 made by the legislature to provide for the manufacture of rabies vaccine and its administration to the indigent case was discontinued in its entirety. However, because of the importance of this vaccine, as well as typhoid vaccine, diphtheria toxoid and ampules of silver nitrate, every effort will be made to continue to furnish, without cost, these products from the central laboratory as formerly.

For the remainder of the present fiscal year, which ends September 30, there will be much uncertainty as to whether sufficient funds will be available to preserve even this much reduced force. However, with the beginning of another year, we should be able to determine more definitely the amounts which will be available for health work, and in consequence, be able to plan a program in keeping therewith. The medical profession, which is responsible for the dispensing of health service in this State, should, in season and out, get over to our people and the legislature a few simple and basic facts, among which are:

(a) Alabama has the machinery already set up and organized, through which a health service of an approved and scientific type may be economically furnished the people in proportion to their ability to pay. The record of accomplishment, as reflected in the marked reduction and control of such accursed and preventable diseases as typhoid, malaria and hookworm, loudly proclaims this fact.

(b) No short-sighted policy of retrenchment or economy should permit to crumble the barriers already erected against such unseen and devastating forces.

(c) Public health, within wide limits, is a purchasable commodity, frequently bringing returns many times greater than the original outlay in dollars and cents.

(d) The medical profession, through ethical and legitimate channels of education, is endeavoring to bring within the people's reach such proven scientific facts as are known to be helpful in promoting health, happiness and longevity.

DEPARTMENT OF PUBLIC HEALTH

BUREAU OF ADMINISTRATION

J. N. Baker, M. D.,
State Health Officer in Charge

THE HEALTH DEPARTMENT'S RESPONSIBILITY IN DISASTER WORK

Whenever sudden and unforeseen disasters befall, such as tornadoes, with which our State has several times been visited during the past two years, fortunate indeed are those stricken counties which have organized health units. These immediately become the first line of defense in the human emergencies, as well as forming a pivotal point around which the various volunteer relief agencies may quickly rally. While the great national agency—The American Red Cross—is making ready to throw in its rescue forces, much good may be accomplished by the trained health workers already in the field. Having made this contribution to meet the immediate emergencies on the human side, the health forces should next concentrate on seeing that the large problem of physical rehabilitation of the homes within the stricken area is done along approved lines of sanitation. It is a sad fact, but true, that, in many instances where these disasters strike, those affected have little or nothing with which to rebuild. Consequently, the problem becomes an increasingly difficult one and has to be solved through the co-ordinated effort of all relief agencies. Under such conditions disease and contagion are quite likely to gain a menacing foothold unless exceptional precautions are taken in the matter of immunization, proper water supplies and sanitation. The gratifyingly low death rate of typhoid fever for 1932—only 133 deaths—might readily be shattered through failure to guard one or more such stricken areas. The residuum of Alabama's typhoid problem now rests largely in our ability to cope with this disease in the rural sections of the State. The urban centers, save for the intractable carrier, have gained an almost complete mastery over the disease. The tornado of a few weeks ago wrought much damage, both in life and property, in three of our counties—Shelby, Bibb and Marengo—practically

all of which was rural and leaving much destitution in its wake. These points became the immediate concern of the Health Department and effort was made to institute all needed precautions in the control and spread of communicable disease. In such emergencies the interest and ready response on the part of the local physicians to co-operate in every phase of the rehabilitation program lightens, immensely, the burden of the official workers and is deserving of the highest praise and commendation.

BUREAU OF VITAL STATISTICS

W. T. Fales, Director

THE DIPHTHERIA CHALLENGE

Figures just released by the U. S. Public Health Service reveal that the death rate from diphtheria in Alabama for last year (1932) was the third highest of the twenty-eight states for which provisional figures are available. The diphtheria death rate per 100,000 population in Alabama was 7.5, as compared with 3.8 for all twenty-eight states. West Virginia and Tennessee were the two states having higher rates than Alabama, namely, 13.2 and 8.2 per 100,000 population, respectively. The lowest rate was in Montana and Minnesota, the rate being only 0.9 per 100,000 in each state.

During the past three years, the death rate from diphtheria for the white population has increased steadily, as is shown by the accompanying figures:

Death Rate From Diphtheria Per 100,000 Population Alabama, 1930-1932		
White	Colored	Total
8.7.....	4.2.....	7.1
9.0.....	5.2.....	7.6
10.4.....	2.5.....	7.6

For the same years the number of immunizations against diphtheria, done almost exclusively in counties with organized health departments, has doubled. There were 142,274 immunizations for the three years 1930-1932, against 74,543 during the preceding three year period. In the last

year, the potent one-dose toxoid preparation for diphtheria, worked out by our late colleague, Dr. L. C. Havens, has eliminated one of the practical difficulties of mass immunizations, since equal or better protection is afforded by this preparation using only one injection than was obtained formerly by using three injections.

It must be remembered, however, that to affect the mortality from diphtheria, immunizations must be largely accomplished during the preschool period. Seventy-four per cent of the deaths from diphtheria in Alabama for the year 1930-1932 were under five years of age. Godfrey* has shown that to lower significantly the death rate from diphtheria, thirty per cent of the population of this age group must be immunized. The Census of 1930 gave Alabama 313,882 children between one and five years of age. Immunizations in Alabama so far have reached only a small percentage of this group.

The accompanying table giving the resident death rates from diphtheria for 1932 indicates its distribution in Alabama. Next to tuberculosis, it represents the most serious public health problem in a large number of our northern counties. As such, it is a challenge to both health officers and the private practitioners. There must be a joint attack. Where parents can afford immunizations they should be done by the family physicians. At the same time, the mass attack necessary to achieve results in the population as a whole makes it necessary that the health officers organize and carry out immunization programs that will assure at least thirty per cent of the children of preschool age being immunized. Since the peak of the diphtheria curve is in the fall and winter months, immunization must be done now during the summer months to affect the incidence next fall. The health organization of Alabama, which includes every member of organized medicine in the State, should accept this challenge and each physician should see that the children of his clientele are immunized, either by himself or at clinics held by the county health department.

*Godfrey, E. S.: Study in the Epidemiology of Diphtheria in Relation to Active Immunization of Certain Age Groups. *Am. J. Pub. Health*, XXII, 237-256.

RECORDED AND RESIDENT DEATH RATE FROM DIPHTHERIA, BY COUNTIES, ALABAMA, 1932

	Deaths		Rate per 100,000 Pop.	
	Recorded	Resident	Recorded	Resident
DeKalb	17	17	41.1	41.1
St. Clair	9	9	36.3	36.3
Chilton	7	8	28.0	32.1
Marshall	13	13	31.4	31.4
Cullman	12	12	28.0	28.0
Jackson	10	9	26.9	24.2
Colbert	8	7	26.8	23.4
Cherokee	4	4	19.8	19.8
Morgan	9	9	18.7	18.7
Blount	5	5	17.5	17.5
Henry	4	4	17.3	17.3
Madison	10	10	14.8	14.8
Winston	2	2	12.6	12.6
Randolph	3	3	11.2	11.2
Clay	2	2	11.2	11.2
Fayette	2	2	10.8	10.8
Dale	1	2	4.3	8.6
Walker	5	5	8.4	8.4
Coosa	1	1	8.0	8.0
Limestone	3	3	7.9	7.9
Lawrence	1	2	3.6	7.3
Lauderdale	3	3	7.2	7.2
Shelby	2	2	7.2	7.2
Covington	4	3	9.5	7.1
Butler	2	2	6.6	6.6
Greene	2	2	6.6	6.6
Talladega	3	3	6.5	6.5
Coffee	2	2	6.0	6.0
Mobile	7	7	5.7	5.7
Calhoun	3	3	5.2	5.2
Autauga	1	1	5.0	5.0
Bullock	1	1	5.0	5.0
Geneva	1	1	5.0	5.0
Bibb	1	1	4.8	4.8
Etowah	3	3	4.5	4.5
Crenshaw		1		4.2
Houston	3	2	6.3	4.2
Wilcox	0	1		4.0
Conecuh	1	1	3.9	3.9
Clarke	1	1	3.8	3.8
Franklin	2	1	7.7	3.8
Perry	1	1	3.8	3.8
Hale		1		3.7
Sumter	1	1	3.7	3.7
Jefferson	18	17	3.8	3.6
Macon		1		3.6
Russell	1	1	3.6	3.6
Baldwin	1	1	3.3	3.3
Monroe	1	1	3.3	3.3
Tallapoosa	1	1	3.2	3.2
Barbour	1	1	3.1	3.1
Pike	1	1	3.1	3.1
Montgomery	3	3	2.9	2.9
Elmore	1	1	2.8	2.8
Lee	2	1	5.4	2.7
Marengo	1	1	2.7	2.7
Chambers	1	1	2.5	2.5
Dallas	1		1.8	
Tuscaloosa	1		1.5	
Choctaw				
Cleburne				
Escambia				
Lamar				
Lowndes				
Marion				
Pickens				
Washington				

BUREAU OF PREVENTABLE DISEASES

D. G. Gill, M. D., Director

CHEST CLINICS SUSPENDED

Alabama has admittedly been behind other states in its attack on tuberculosis in that during the period when other states built sanatoria and made provision for the hospitalization of their sick this state had no such program. A sanatorium in itself though, without a proper field service, is of limited value. A well-balanced program calls for a certain number of beds devoted to tuberculosis patients, and of equal im-

portance, provision for diagnosis and for the home care of the vast number who can never be hospitalized.

In this state, aid for the various counties in their hospitalization program was provided by the Legislature of 1931, the subsidy to be available when in the opinion of the Governor funds were available. Needless to say, this aid has not yet become available. The program of home care for the tuberculosis case and his contacts is part of the program of every county health department, and a vast number of cases are under constant supervision.

Provision for "Early Diagnosis" is the third essential of the program. Naturally this is primarily the field of the practicing physician, but for the past two and a half years traveling clinics have been available for consultative service in those counties desiring such service. During this time more than 160 clinics were held and some eight thousand examinations made. More than 1,500 people were diagnosed for the first time as having tuberculosis.

The forced suspension of these clinics at the present time is to be regretted and it is hoped that they may be re-instated at some future date. They filled a definite need and their loss is a backward step in the fight against tuberculosis.

D. G. G.

COMMUNICABLE DISEASE AND THE PUBLIC HEALTH NURSE

The public health nurse is an important factor in the prevention of disease. This she accomplishes in two ways: first, by assisting the attending physician in teaching the family how to carry out his instructions; and second, by teaching the public the possibilities of immunization before diseases occur.

The public health nurse teaches the following points in a communicable disease visit:

1. Concurrent disinfection of discharges and all articles used by patient.
2. Self-protection of the person responsible for the patient.
3. Prevention of sequelae.
4. Importance of strict observance of isolation or quarantine.
5. Protection of contacts by immunization.
6. Terminal disinfection.

To perform this teaching service intelligently, the nurse has to be thoroughly informed on the various preventable diseases. While she is never called upon to diagnose any condition, she must be able to recognize the symptoms of communicable diseases; to know the periods of incubation and quarantine; to know the modes of transmission; and, very important, she must be familiar with the legal regulations in force.

The second service, that of immunization, stimulates the nurses to acquire adequate knowledge of the subject. It is necessary for her to know something of the nature of the vaccines so she can intelligently answer questions; she must keep herself informed about any developments of new or improved immunizing agents; and she has to be a teacher who can convince the persons to whom she is offering such protection.

The service offered by the State laboratories is a constant challenge to the nurse, and although she may never be called upon to do so, she must know how to properly collect specimens and how to instruct others in their collection and transmission to the laboratory.

C. C.

BUREAU OF LABORATORIES

Catherine R. Mayfield, Acting Director

THE COLLECTION OF SPECIMENS FOR TYPHOID CULTURE EXAMINATION

Many special mediums have been described for the isolation of the typhoid group but little attention has been paid the preservation of the specimen. Preservation of the specimen for subsequent study is as important as the isolation and identification of significant bacteria and usually presents greater technical difficulties. Brilliant green-bile has been used by the laboratories of the Alabama State Board of Health since 1924 for the collection of typhoid cultures. Recent studies¹ in this laboratory have demonstrated the superiority of a different medium over the brilliant green-bile. The use of this medium has necessitated changes in the collection of typhoid cultures.

1. J. Infect. Dis. 52: 157, 1933.

1. *Lithium Chloride Glycerin for the Preservation and Recovery of the Typhoid Bacillus in Feces and Urine.*—Glycerin in salt solution² is widely used for the collection of feces cultures for typhoid examination, but Havens and Ridgway³ have shown that brilliant green is a better preservative, and further observations¹ indicate that bacteria survive about equally well in glycerin, there being a progressive diminution of the pathogens concomitant with that of the normal flora. A medium with addition of lithium chloride to 30 per cent glycerin in 0.85% salt solution to make a final concentration of 0.5% was compared with brilliant green-bile and 30% glycerin. These media were streaked on plain Endo agar and lithium chloride-Endo agar at intervals of 24 hours. The results are given in Table 1.

TABLE 1

Results With Fifty Specimens of Feces Heavily Seeded With *B. Typhosus* and Preserved in Three Different Media, Comparison of Plain and Lithium Chloride Endo Agar Plates

Hours After Inoculation	30% Plain Endo Agar	Glycerin LiCl Endo Agar	LiCl Plain Endo Agar	Glycerin LiCl Endo Agar	Brilliant Green-Bile Plain Endo Agar	Brilliant Green-Bile LiCl Endo Agar
0	50	50	50	50	50	50
	21	38	21	38	21	38
	44	50	47	50	49	49
24	18	39	26	43	30	43
	40	43	42	50	45	43
48	16	41	19	38	26	38
	19	32	27	49	38	45
	9	19	16	36	21	36
72						
Positive at 72 hrs., %	38	64	54	98	76	90
<i>B. Typhosus</i> in excess at 72 hrs., %	18	38	32	72	42	72

Each specimen consisted of 0.1 gm. of feces and 0.1 cc. of a twenty-four hour broth culture of *B. typhosus*. The upper figure refers to the number of plates on which typhoid colonies exceeded all others.

The most striking result of the experiment with feces heavily seeded with typhoid bacilli was the remarkable difference between plain Endo plates and the lithium chloride-Endo agar plates. It was a clear cut demonstration of the value of a selective medium for isolation, as well as for preservation. The specimens preserved in 30% glycerin showed a progressive decrease in positive results, as well as in the number with an excess of typhoid colonies. The addition of lithium chloride to the glycerin produced a striking improvement in

the recoveries at seventy-two hours. The least difference between the plain and lithium chloride-Endo agar plates was observed with the specimens in brilliant green-bile; the combined action of the dye and acidity (acid treated brilliant green dye) produced sufficient inhibition to give the best results on plain Endo agar.

A much more severe test of the comparative merits of the three media is the inoculation of feces with the smallest number of organisms that can be detected on immediate plating. The results obtained with a series of twenty-five specimens of feces seeded with 0.0001 cc. of a twenty-four hour broth culture are given in Table 2.

TABLE 2

Results With Twenty-five Specimens of Feces With a Minimum Number of Typhoid Bacilli

Hours After Inoculation	30% Plain Endo Agar	Glycerin LiCl Endo Agar	LiCl Plain Endo Agar	Glycerin LiCl Endo Agar	Brilliant Green-Bile Plain Endo Agar	Brilliant Green-Bile LiCl Endo Agar
0	0	5				
	0	25				
	1	9	5	16	7	13
24	3	40	80	127	53	216
	0	5	4	16	3	9
48	0	102	45	135	14	149
	0	3	5	15	0	7
72	0	17	65	165	0	159
Positive at 72 hrs., %	0	12	20	60	0	23

Each specimen consisted of 0.1 gm. of feces and 0.0001 cc. of a twenty-four hour broth culture of *B. typhosus*. The upper figure in each space refers to the number of plates on which typhoid colonies were present; the lower figure, to the total number of typhoid colonies on the twenty-five plate.

This amount of typhoid was only one-thousandth of the inoculation used in the preceding series, and on immediate streaking of 1 loopful only five of the twenty-five specimens showed any typhoid colonies, and these were all on the lithium chloride-Endo plates. Of the specimens in glycerin streaked on plates after twenty-four hours, nine were positive on lithium-Endo agar, with a total of forty colonies, and there was a progressive decrease till, at seventy-two hours, recoveries were obtained from only three specimens. The brilliant green-bile gave good results on plain and lithium chloride-Endo plates for the first forty-eight hours but was negative on plain Endo plates at 72 hours; while seven of the specimens showed positive on the lithium chloride-Endo plates. As in the previous series, the addition of lithium chloride to the glycerin was a distinct improvement.

The lithium chloride glycerin has been found to be equally as successful for the

2. Gilbert, Colman, and Zimmer: *Am. J. Pub. Health*, 16: 743, 1926.

3. *J. Infect. Dis.* 43: 345, 1928.

collection of urine for typhoid cultures. Double typhoid containers equipped with lithium chloride glycerin are available for the collection of feces and urine cultures.

2. *Lithium Chloride Bile Medium for the Multiplication and Recovery of the Typhoid Bacillus in Blood.*—Lithium chloride glycerin is an excellent medium for the preservation of *B. typhosus* in feces and urine, but a different medium is necessary for the collection of blood cultures for typhoid examinations. A medium in which multiplication of the typhoid bacillus occurs is necessary for blood cultures, as very few organisms are present when the blood culture is first taken. Very few of the blood cultures are positive after the first twenty-four hours, which necessitates repeated streaking of the culture for three days. Bile with the addition of 0.5% lithium chloride, to destroy any contamination present, is being used for this purpose. Single typhoid containers, marked for *blood only*, are available for the collection of blood cultures for typhoid examinations.

BUREAU OF SANITATION

G. H. Hazlehurst, Director

CLEAN WATER FOR SWIMMING POOLS

Water for use in swimming pools may be derived from springs, wells, or surface streams. In the case of pools located in municipalities the water is usually secured from public drinking supplies.

Regardless of source, a water to be satisfactory for swimming pool use should be sparkling clear, free from visible foreign material, free from excess chemicals that might irritate the eyes, throat, or skin of the bather, and of safe sanitary quality at all times. The securing and maintaining of the water in such physical and sanitary condition involves several processes depending upon the initial quality of the water, the method and rate of circulation and the bathing load (number of persons using the pool).

Water from wells or springs is usually of satisfactory physical quality; that from public drinking supplies satisfies both physical and sanitary requirements. Water from surface streams, however, to be satisfactory from a physical or sanitary standpoint, or both, usually requires some type of treatment.

The physical conditioning of the water, when necessary, is accomplished through proper chemical treatment and filtration. Such treatment usually consists of the addition of alum and sometimes lime for coagulation prior to filtration. The filter removes foreign matter and a certain per cent of bacteria through the straining, adhesive, and assimilating action of the filter media.

The desired bacterial or final sanitary quality of the water is obtained through the application of any one of various disinfecting agents. These agents include, ozone, ultraviolet rays, and chlorine or some of its compounds. Most sanitary engineers agree that either chlorine, or some of its compounds, provide the most satisfactory method of disinfection.

Where the disinfectant is applied intermittently it is possible to completely disinfect the entire body of water in the pool, but as pollution is disseminated by the bathers themselves the water gradually becomes more and more contaminated until the next disinfecting period. With chlorine applied continuously as the disinfectant, and properly distributed throughout the pool full of water, it is possible not only to completely disinfect, but also to maintain in the pool of water at all times a residual amount of chlorine sufficient to immediately sterilize any pollution disseminated by bathers.

The application of chlorine or its compounds is very simple, and control of the amount of residual chlorine in the water may be ascertained by the pool operator, at any time by means of the o'tolidin test.

Methods of maintaining the desired water quality include the rate of circulation, or replacement, as well as disinfection.

The rate of circulation or replacement of water in pools may be controlled by completely emptying and refilling the pool at definite intervals, by a continuous flow of fresh water through the pool, or by recirculation and repurifying of the pool water. These methods, if the time interval of changing or replacing the water is adjusted according to the bathing load, will insure the maintenance of a water of satisfactory physical quality.

To assure proper quality of water in a pool at all times, the person in charge of operating it should make regular routine

tests to determine the alkalinity of the water and the amount of residual chlorine in the water when the pool is in use.

Clean water is not only more pleasing to the esthetic senses of the public but will tend to minimize diving hazards and the transmission of diseases made possible through the medium of unclean swimming pools.

R. P. F.

CURRENT STATISTICS

*PREVALENCE OF COMMUNICABLE DISEASES IN ALABAMA

	March	April	Estimated Expectancy
			April
Typhoid	10	26	34
Typhus	15	15	2
Malaria	16	39	115
Smallpox	17	8	81
Measles	114	393	904
Scarlet fever	55	43	62
Whooping cough	110	192	177
Diphtheria	55	49	53
Influenza	502	202	986
Mumps	165	167	145
Poliomyelitis	1	2	2
Encephalitis	9	8	2
Chickenpox	80	73	221
Tetanus	1	6	4
Tuberculosis	318	308	361
Pellagra	16	62	59
Meningitis	4	5	9
Pneumonia	327	321	499
Syphilis (private cases)	139	169	134
Chancroid (private cases)	2	2	10
Gonorrhea (private cases)	89	116	152
Ophthalmia neonatorum	3	0	2
Trachoma	0	2	0
Tularemia	0	0	1
Undulant fever	0	0	1
Dengue	0	0	0
Rabies	0	0	0

*As reported by physicians and including deaths not reported as cases.
The Estimated Expectancy represents the median incidence of the past nine years.

PROVISIONAL MORTALITY STATISTICS

Alabama, March 1933

CAUSE	Number of Deaths Registered March 1933			Annual Rate per 100,000 Population		
	White	Colored	Total	March 1933	March 1932	March 1931
ALL CAUSES	1197	999	2196	943.5	1158.5	1243.1
Typhoid fever		1	1	0.4	3.0	1.3
Smallpox						
Measles	2		2	0.9	0.4	18.4
Scarlet fever					2.2	1.3
Whooping cough	13	8	21	9.0	5.2	4.8
Diphtheria	2	2	4	1.7	3.9	2.6
Influenza	76	50	126	54.1	56.6	113.8
Pneumonia, all forms	105	95	200	85.9	120.6	131.8
Poliomyelitis		2	2	0.9		1.7
Tetanus	1	1	2	0.9	1.3	1.3
Tuberculosis, all forms	63	106	169	72.6	77.5	90.6
Tuberculosis, pulmonary	59	93	152	65.3	70.5	84.5
Malaria					3.5	3.1
Cancer, all forms	100	30	130	55.8	55.3	56.5
Diabetes mellitus	17	1	18	7.7	10.0	14.0
Pellagra	10	13	23	9.9	10.0	18.8
Cerebral hemorrhage, apoplexy	67	60	127	54.6	62.7	68.7
Diseases of heart	198	116	314	134.9	128.4	116.9
Diarrhea and enteritis						
Under 2 years	7	3	10	4.3	5.2	3.5
2 years and over	4	2	6	2.6	6.5	4.8
Nephritis	99	80	179	76.9	77.9	101.1

Puerperal state, total	19	11	30	12.9	19.6	19.3
Puerperal septicemia	7	1	8	3.4	4.8	4.8
Congenital malformations	14	4	18	7.7	8.3	6.1
Congenital debility and other diseases of early infancy	64	39	103	44.2	51.4	60.0
Senility	14	16	30	12.9	17.8	14.9
Suicides	16	2	18	7.7	10.4	10.1
Homicides	12	34	46	19.8	14.4	17.1
Accidental burns	12	11	23	9.9	9.1	10.5
Accidental drownings	1	6	7	3.0		3.1
Accidental traumatism by firearms	5	3	8	3.4	0.9	3.1
Mine accidents		2	2	0.9	0.9	2.2
Railroad accidents	5	6	11	4.7	5.2	4.8
Automobile accidents	17		17	7.3	12.6	17.1
Other external causes	21	9	30	12.9	111.5	22.8
Other specified causes	163	121	284	122.0	148.0	163.7
Ill-defined and unknown causes	70	165	235	101.0	115.8	132.6

Medical News

(Secretaries of county medical societies and other physicians will confer a favor by sending for this section of the Journal items of news relating to society activities.)

Dr. Harry Boyer Weiser, Professor of Chemistry, Rice Institute, gave the annual lecture of the Sigma Xi Club of the University of Alabama on March 30th. His subject was "Colloidal Phenomena in the Formation of Gallstones".

* * *

During the Century of Progress Exposition, Chicago, the Chicago Medical Society will maintain a booth in the Hall of Science Building in Group K. Visiting physicians are invited to avail themselves of the facilities of the booth and to seek there such information as they may desire. The Woman's Auxiliary of the Chicago Medical Society will welcome the wives and daughters of physicians.

* * *

At a regular meeting of the Baldwin County Medical Society held at Roberts-dale, May 11, the following resolution on the death of Dr. Sibley Holmes was adopted:

A RESOLUTION

WHEREAS, According to the inevitable decree of nature, Dr. Sibley Holmes of Foley, Alabama, who was a member of this County Medical Society, has been taken to the great beyond; therefore be it
Resolved, That this County Medical Society wishes to express their appreciation for the great work done by him, especially in the realm of preventive medicine, and as a physician, and public spirited citizen who was recognized not only all over this county, but over the entire State of Alabama; and be it further
Resolved, That this County Medical Society has suffered a distinct loss in his passing, and wish hereby to convey to his family an expression of our

regard for him, and to that end it has been ordered that a copy of these resolutions be written in the Minutes of this County Medical Society as a permanent record, and a copy sent to his widow.

Miss Ada Causey and Miss Mary Quarrels met with the County Medical Society at this time to discuss with the physicians a more economic plan for giving the indigents medical attention. Miss Causey suggested clinics to be held in four places in the county, at which place the applicant for free treatment might be met by the physicians all on one day, and also suggested that a building be secured, if possible, to be used as an office and hospital, where a limited number might be kept and given minor operation or treatment. Dr. F. B. Moore, of Fairhope, offered the use of his hospital at that place. The entire subject was thoroughly discussed by all those present, and it was suggested and received unanimous approval that this plan be tried out, and that the indigent be required to pay something, if possible, and if they could do nothing else they might bring food stuffs to the house used as a hospital. A move was made by Dr. Moore, seconded by Dr. Abernethy, and unanimously approved by vote, for the plan to be tried out as above, and Miss Causey stated that she would go to work on it immediately.

The Health Officer made his report, stating that his activities through the winter just passed had been concentrated on defective vision, and that some of the rural schools had changed the seating of the rooms to approximate a correct position of the child with relation to the lighting. He further stated that two years ago in an examination of about 3,500 children, not as carefully made as this last winter, that he found $18 \frac{2}{3}$ per cent defective in vision, and this last school year examining about the same number he found $15 \frac{2}{3}$ per cent while making a very careful examination. He proposed on account of the large percentage of defective vision and on account of the number of granulated lids found in some particular schools, that clinics be held in different parts of the county, securing the services of a qualified oculist, and that those children having granulated lids or defective vision be induced to come to the clinics and examined and given advice as to the proper procedure for correction of the

defect. His plan was unanimously adopted by a move, seconded, and vote.

Dr. Abernethy asked for statement of financial status of treasury, which was added up since January, 1932, when the bank failed at Bay Minette; receipts were found to have been \$67.85, disbursements within the same period \$70.00, leaving a deficit of \$2.15. Dr. Abernethy suggested that the dues be put back to \$5.00 per annum, but Doctors Hail, Godard, and the Secretary suggested that no action would be necessary, since nothing appeared in the Minutes of any previous meeting reducing dues from \$5.00.

Dr. Abernethy made report on the meeting of the State Medical Association, to which he was a delegate.

The question of changing the time of meeting of this County Medical Society from day to night was discussed at length. Dr. Godard moved, and Dr. Abernethy seconded the motion that the meeting be changed to night, and with their consent this motion was amended to read Friday night instead of Thursday night, at the regular time of meeting, that is, the first Friday night, at 8:00 P. M., in summer, and 7:00 P. M. in winter.

The meeting adjourned, to meet in Fairhope at 8:00 P. M., Friday, July 7th, 1933.

* * *

Dr. J. Y. Floyd, dentist of Brundidge, wishes the members of the Association to know he has experienced difficulty in collecting on a policy carried in the Physicians Protective Union of America, with its Southern Division at Shreveport, Louisiana. According to Dr. Floyd, the Company does not have a license to engage in business in Alabama. Previously the Secretary of the Association has warned the profession against patronizing companies that have not qualified under the insurance laws of the State.

* * *

The thirteenth session of the Southern Pediatric Seminar will be held July 24 to August 5 at Saluda, N. C. The Seminar, under the leadership of Dr. W. A. Mulherin, is a postgraduate summer course in methods of diagnosis, prevention, and treatment of diseases of children.

The course is given by a group of Southern pediatricists, interested in the advance-

ment of their specialty. Included are Frank Howard Richardson, Lawrence T. Royster, Owen H. Wilson, W. L. Funkhouser, Charles J. Bloom, S. H. Welch, J. Mason Knox, H. L. Casparis, Oren Moore, and Kenneth M. Lynch.

Further particulars regarding expense may be procured from the Registrar, Dr. D. Lesesne Smith, Infants' and Children's Hospital, Saluda, N. C.

Book Abstracts and Reviews

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1932. Cloth. Price, \$1.00. Pp. 104. Chicago: American Medical Association.

The Council on Pharmacy and Chemistry still carries on its work of informing the medical profession concerning the new medicinal products brought out by the various manufacturers of pharmaceuticals. This volume contains the reports on products considered and rejected by the Council during the past year. Among the reports of special interest are: Amertan, an unoriginal mixture of tannic acid and merthiolate in a water soluble jelly, marketed under a proprietary, uninforming name; Antiopin, a mixture of indefinite composition offered under a nondescriptive, therapeutically suggestive name and marketed in a way that may foster the drug habit; Eubetin, another insulin substitute for oral administration marketed under a proprietary uninforming name with unwarranted claims; Ferro-Copral, a mixture of saccharinated ferric oxide, manganese citrate and copper proteinate proposed for use in the treatment of pernicious anemia and marketed under a proprietary name with unwarranted therapeutic claims; Hepatex P.A.F., a liver preparation proposed for intravenous use and marketed under a proprietary and insufficiently descriptive name with no satisfactory evidence of the safety of its recommended intravenous use; Bi-So-Dol, an unscientific "alkalinizing" mixture offered under an uninforming proprietary name with exaggerated and unwarranted claims of therapeutic usefulness; Gan-Aiden, consisting mainly of the well known ethyl amino-benzoate (benzo-caine), a preparation of undeclared composition marketed under a noninforming, proprietary name; Myodin, Subidin, and Sanguiodin, unscientific preparations of iodine marketed with unwarranted claims and indefinite, incorrect statements of composition, under proprietary uninforming names and Tonikum-Roche (Now Elixir Arsylen Compositum-Roche), a "shot-gun" proprietary "tonic" marketed with misleading therapeutic claims.

Besides the reports on rejected articles, the volume contains "Preliminary" and "Special" reports of exceptional timeliness and value: The preliminary report on Thorotrast, a colloidal thorium dioxide preparation proposed for use in retrograde pyelography and for roentgen visualization of the liver and spleen by intravenous administration, is an excellent example of this class of reports. The

articles on Nirvanol and Triethanolamine are also interesting and effective preliminary reports. Among the "special" reports those on Sulpharsphenamine and Mercurochrome are outstanding. Each report definitely clears up the present status of the drug concerned, the former, on the basis of a questionnaire circulated among leading syphilologists, and the latter on the basis of independent bacteriologic investigation, done by consultants of the Council.

New and Nonofficial Remedies, 1933, containing descriptions of articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1933. Cloth. Price, postpaid, \$1.50. Pp. 498; lvi. Chicago: American Medical Association.

The annual editions of this volume contain all that the busy physician needs to know concerning the newer preparations which he is daily importuned by the detail men of the pharmaceutical manufacturers to use. The remedies listed and described here have been examined and found acceptable by the Council on Pharmacy and Chemistry, the deliberative body charged by the American Medical Association with the performance of this service for the practitioner, who has not the time or means to make the determinations for himself. Among the new preparations admitted during the past year are: Tri-chlorethylene-Calco, an inhalation anesthetic proposed especially for use in trigeminal neuralgia; Nostal, an additional barbituric acid compound; Decholin and Decholin Sodium, bile salt preparations for use in functional insufficiency of the liver, the sodium salt being suitable for intravenous use when necessary; Biliposol, Bismocymol, and Iodobismitol, bismuth compounds for use in obtaining the systemic efforts of bismuth, especially in syphilis; Triphal, a gold salt proposed for use in the treatment of lupus erythematosus; a number of improved liver preparations for use in the treatment of pernicious anemia; two halibut liver oil preparations of high vitamin A and vitamin D content; and Pentnucleotide, the sodium salts of the pentose nucleotides derived from the ribonucleic acid of yeast, proposed for use in infectious conditions accompanied by a leukopenia or neutropenia.

The book contains general articles, descriptive of the classification under which the various drugs are listed. According to the preface, more or less thorough-going revisions have been made of the articles: Arsenic Compounds; Dyes, Iodin Compounds; Liver and Stomach Preparations; Radium and Radium Salts and Silver Preparations.

Cervico-Vaginitis of Gonococcal Origin in Children: Report of a project of the Bellevue-Yorkville Health Demonstration, New York City. By Walter M. Brunet, M. D., Dora M. Tolle, M. D., Sara Alicia Scudder, and Anne Ruth Medcalf. 97 pages.

This report describes the detailed and painstaking investigation of a troublesome health problem, carried on over a period of four and a half years by the Bellevue-Yorkville Health Demonstration, New York City, which was financed by the Milbank Memorial Fund. Agencies dealing with girl children had felt acutely the need for fuller information about certain aspects of vaginitis, a problem of medical, sociological, sanitary, and economic importance, when in July 1927, a research project in

this field was inaugurated at the suggestion of Commissioner of Health Shirley W. Wynne.

The Committee appointed, composed of experts in the medical and social fields, outlined a far-reaching program providing for intensive research. This included clinical, bacteriological, and sociological methods of diagnosis and procedure; comparative methods of treatment; laboratory technic; social service and follow-up; and history forms for medical and social data.

The objectives of the study were briefly as follows: (1) to study each individual case in its entirety, including a complete physical examination; (2) to determine if possible the cause of the local conditions, evaluating the clinical, pathological, and bacteriological findings; and (3) to compare the methods of treatment and secure a complete sociological picture and examination of contacts.

Of 241 children selected for intensive study, 192, or 79 per cent, were judged to have positive clinical gonorrhea. The full and detailed account of the study as it was carried out is of importance to every one concerned with any phase of clinical medicine and public health—to the general practitioner, the pediatrician, the gynecologist, and the bacteriologist.

The Practical Series of Year Books—General Therapeutics. Edited by Bernard Fantus, M. S., M. D., Professor of Therapeutics, University of Illinois School of Medicine; Member, Revision Committee, United States Pharmacopeia and of National Formulary Revision Committee; and Louis B. Kartoon, B. S., M. D., Instructor of Medicine, University of Illinois, College of Medicine. Series 1932. The Year Book Publishers, Inc., Chicago. 448 pages. Cloth. Price \$2.25.

Except for a division of the book into chapters on general therapeutic technique, antipathogens, tissue alterants, function modifiers, toxicology and physical therapy—a disadvantage which is largely overcome by a well compiled index—this volume is one of the most valuable of the Year Book Series.

In the medical school in which the reviewer received his education, there was no course in therapeutics though there was a very excellent course in pharmacology. The teaching staff seemed to be under the impression that the science of medicine was far more important than the art of treating sick people. In private practice one quickly learns that the patient is interested more in the form of treatment and its success than in the scientific data concerning the pharmacology of the drug. With such a background of training in therapeutics, the reviewer found in this volume a very practical aid in the solution of his daily problems.

It is surprising to know how many important observations in the field of therapy were made during the past twelve months. There are excellent reviews on the use of mineral oil in the bladder, the intracarotid injection in the treatment of meningitis, the injection treatment of hemorrhoids and hydrocele, the active principle of maggots in the treatment of osteomyelitis, lung collapse therapy, the newer amebicides, intravenous streptococcus therapy in arthritis, pentose nucleotide in the treatment of agranulocytosis, cortin in the treatment of Addison's disease, ovarian therapy in hemophilia, low protein diet in the treatment of psoriasis, carbon dioxide in the prevention of postoperative complications, and methylene blue in cy-

anide poisoning. The medical profession should be proud of its accomplishments in this field during the past year.

This little volume contains more valuable material than any of the same size that has come to the reviewer's attention in many months. It deserves a place not on the practitioner's bookshelf but on his desk.

C. K. W.

Operative Surgery: Volume VII, by Warren Stone Bickham, M. D., and Phar. M. (Tulane), M. D. (Columbia), F. A. C. S., Former Surgeon in charge of General Surgery, Manhattan State Hospital, New York; Former Instructor in Operative Surgery, College of Physicians and Surgeons (Columbia), in the New York Post-Graduate Medical School and Hospital and in the New York Polyclinic Medical School and Hospital, Fellow of the New York Academy of Medicine, and Calvin Mason Smyth, Jr., B. S., M. D., F. A. C. S., Assistant Professor of Surgery, Graduate School of Medicine, University of Pennsylvania; Surgeon-in-Chief Methodist Episcopal Hospital; Visiting Surgeon, Abington Memorial Hospital. Volume VII, including General Index to complete work, Volumes I-VII. 849 pages with 765 illustrations. Philadelphia and London: W. B. Saunders Company, 1933. Cloth. \$10.00.

Though the six-volume set of Bickham's Surgery was published only nine years ago, there have been enough additions to the field of operative surgery to warrant the publication of a book of over six hundred pages describing in detail the newest operations and allied procedures. The form of this seventh volume is identical with that of the rest of the set. It is perhaps even more copiously illustrated than the original six volumes. The subject of spinal anesthesia is brought up to date; cervical cesarean section is discussed in more detail than in the original volumes and there are notable additions to the section on chest and heart surgery. The subject of thoracoplasty in the treatment of tuberculosis is one of the outstanding contributions in this volume.

Newer methods in preoperative and postoperative care are described and the advances in the various surgical specialties are included. The publishers have wisely included an index which covers the entire seven volumes. This seventh volume is not only an addition to the original system but is also well worth possessing as a separate volume.

J. L. B.

Light Therapy. By Frank H. Krusen, M. D., Director of the Department of Medicine, Temple University School of Medicine, Philadelphia. Foreword by John A. Kolmer, M. D., Professor of Medicine, Temple University School of Medicine, Philadelphia. Paul B. Hoeber, Inc., Publishers. New York. 200 pages, 33 illustrations. Cloth. \$3.50.

Out of the maze of literature on the subject heliotherapy, like a ray of sunshine in the dark, comes a little book of less than 200 pages describing without exaggeration or undue depreciation the present status of light therapy. In the chapters on the physics of light and the sources of therapeutic light the author has used terms so clear and concise that they are intelligible even to the untrained. The chapter on physiology is thoroughly covered and the description of the technique is very practical. In the section of the book dealing with indications for the use of ultraviolet radiation in the treatment of various diseases, the author is perhaps a bit too brief, but he gives a very inclusive list of references to articles dealing with the application of heliotherapy to diseases of the alimentary tract, respiratory system, the nervous system, bones, joints, and muscles, the skin, gen-

ito-urinary and gynecological systems, ear, nose and throat and various systemic diseases. The section dealing with the application of light therapy in pulmonary tuberculosis is particularly well done. The conclusions are brief and concise.

On the whole the book is very carefully written and extremely conservative and covers all the major factors in light therapy. F. P. B.

Truth About Medicines

PROPAGANDA FOR REFORM

Bacteriophage Therapy.—The early hopes of bacteriophage therapy have hardly been realized. In spite of much experimentation, which has shown why bacteriophage could not function therapeutically, at least as a specific agent pitted against a specific infection, clinical observations have been accumulating which indicate that intravenous injection of bacteriophage may have beneficial effects. The material labeled "bacteriophage" which the clinician injects into a patient with severe septicemia is obtained by first growing the particular bacterium on a broth medium and then introducing bacteriophage into the turbid culture. After further incubation the material becomes entirely clear, showing that the bacteria have been dissolved and killed by the bacteriophage, the concentration of which has increased sufficiently to cause bacterial disintegration. Obviously, such a bacteriophage solution is not a simple solution or suspension of bacteriophage. These disintegrated cultures of bacteria may therefore be considered supervaccines containing all the chemical constituents of the bacteria. Larkum has advocated, in general, the use of lysed bacterial cultures instead of the ordinary vaccine as being much more effective. Though the use of bacteriophage as a specific agent has been disappointing, it may yet yield important results by showing how more effective vaccines may be prepared. (J. A. M. A., May 6, 1933, p. 1431.)

Commercial Aspects of Bacteriophage Therapy.—The premature commercial exploitation of "bacteriophage" has no doubt induced expenditure of considerable sums for therapeutically inert preparations of bacteriophage-lysed bacterial filtrates.

Competent investigators who have made impartial and conscientious efforts to determine the clinical value, limitations and dangers of the Twort transmissible lysin ("bacteriophage") marvel at the policy of suppression of scientific fact in the promotion of bacteriophage preparations. If data suggesting limitations and dangers had been suitably set forth in advertising prospectuses, clinical trials might have been limited to certain well defined pathologic conditions, leading eventually to official endorsement, whereas the Council on Pharmacy and Chemistry has not yet accepted such preparations. Moreover, there is a rapidly growing resentment and distrust of the whole bacteriophage promotion, which certainly will delay final clinical evaluation. The Council on Pharmacy and Chemistry is a safe guide to follow at a time when all sorts of untried therapeutic plausibilities are being launched on the medical profession. (Jour. A. M. A., May 20, 1933, p. 1603.)

Fuadin.—The Council on Pharmacy and Chemistry reports that Fuadin is a complex trivalent antimony compound (sodium antimony III biscatechol-disulfonate of sodium), distributed by the Winthrop Chemical Company. It is marketed in the form of a solution, in ampules containing about 6.3 per cent of the drug and representing about 8.5 mg. of antimony per cubic centimeter. It is proposed for use in the treatment of bilharziasis and granuloma inguinale in place of antimony and potassium tartrate, and is administered in doses of from 1.5 to 5 cc. until a total of from 40 to 45 cc. has been given. The Council's Committee on Nomenclature felt that the selection of the name Fuadin (named after Fuad I, King of Egypt, because of his interest in the product) is regrettable. However, it was not found technically in conflict with the Council's rules and, since the firm for practical reasons hesitates to give it up, the Council voted to recognize it. Fuadin was synthesized by H. Schmidt of Elberfeld for use in the treatment of bilharziasis. The pharmacology has to some extent been elucidated by Hammuda of Cairo and Weese of Elberfeld, who found the compound safe in therapeutic dosage. No data on toxicity and excretion were found in the published

literature. Khalil and his co-workers have treated a large series of cases of bilharziasis with Fuadin with reported excellent results, and claim it to be superior to antimony and potassium tartrate in that it may be administered intramuscularly, side actions are less pronounced, and the course of treatment may be shortened. The use of Fuadin in granuloma inguinale is still in the experimental stage; the data presented in the paper of Williamson et al. are incomplete and must be supplemented by more complete reports before the therapeutic usefulness of Fuadin may be considered to be established. No information was available to the Council's referee as to the effects of Fuadin on the kidneys. As antimony compounds are known to be renal irritants, caution is indicated until this phase of the problem has been properly elucidated. As a result of its consideration of Fuadin, the Council held that the use of this drug in granuloma inguinale is still in the experimental stage and that great caution is necessary in its use. The Council postponed further consideration of the product until confirmatory evidence for its therapeutic value becomes available. (Jour. A. M. A., May 27, 1933, p. 1685.)

Vitamin D and Well Being.—New problems in relation to the possible function of vitamin D in promoting bodily welfare continue to arise, despite the commendable progress of recent years. One concerns the uncertainty of the need of supplementing the diet with added vitamin D if it is liberally supplied with the appropriate mineral constituents, notably calcium and phosphorus. In new studies on animals that were subjected over long periods to extreme calcium deprivation, Templin and Steenbock of the University of Wisconsin found that the introduction of moderate amounts of vitamin D into the calcium-deficient ration provided considerable protection from mineral losses in a parallel series of rats. The results tend to support the impression of the value of vitamin D as a food constituent for the adult. The Wisconsin biochemists frankly insist that it is unwarranted to expect that vitamin D administered in any amount should be able to compensate fully for an extreme lack of calcium or other dietary essentials. As the

basal diet was not optimal with respect to protein or phosphorus content, it is possible that the favorable effects of vitamin D on calcium conservation might have been accentuated if the diet had been improved in these respects also. This is equivalent to the much needed reminder that vitamins are by no means the sole essentials for a healthful diet. (Jour. A. M. A., May 27, 1933, p. 1692.)

Omnadin Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Omnadin (Prolipin) is a preparation manufactured by the H. A. Metz Laboratories, Inc., recommended for use as nonspecific lipoprotein therapy practically as a cure-all. In an advertising circular it is stated to be “. . . a sterile solution, composed of protein substances obtained from non-pathogenic bacteria (*sarcina* and *B. mycoides*), various animal fats and lipoids derived from bile.” In another circular it is said to be “. . . a combination of proteins and lipoids originated by Professor Much.” It is apparent that Omnadin is a semisecret preparation marketed under an uninformative name. The following are some of the claims made for this product: “The chief conditions in which Omnadin has proved of value comprise influenza, pneumonia, erysipelas, scarlatina, measles, pertussis, typhoid fever, puerperal sepsis, surgical sepsis, arthritis, gonorrhea, eye infections, tonsillitis and otitis . . . colds . . . gastric and duodenal ulcer. . . . It can also be used advantageously for activating specific vaccine therapy. . . . It is extremely well borne by adults, children and even infants.” The Council's referee has reviewed the fairly extensive clinical literature on Omnadin of the past several years, practically all of which emanates from foreign sources. Without exception, the reports are uncritical and the observations uncontrolled. There is no reliable evidence that Omnadin involves any advance in nonspecific immune therapy. The Council believes that it must be classed as a dangerous preparation: If it contains antigenic material, claims of complete safety in its therapeutic use must be considered reprehensible; even if it has only a trace of antigen, it may yet cause allergic reactions; and if it is devoid of antigenic potency, its

use is unwarranted and may carry a hazard in the neglect of more effective remedies. The Council declared Omnadin (Prolipin) unacceptable for inclusion in New and Non-official Remedies because it is an unscientific preparation of semisecret composition (rules 1, 2 and 10), marketed with unwarranted and extravagant therapeutic claims (rule 6) under an uninformative name (rule 8). (Jour. A. M. A., April 15, 1933, p. 1173.)

Estrogenic Substances: Theelin.—The Council on Pharmacy and Chemistry reports that the introduction into therapeutics of commercial preparations with active estrogenic properties marked what appeared to be a new phase in the treatment of female sexual disorders. These new preparations, unlike those with which the market had been replete for many years, produced striking and concordant effects when injected into animals. Their clinical use spread widely and rapidly, and observations accumulated in profusion. But the early enthusiasm began to wane as it became evident that the therapeutic usefulness of the estrogenic preparations had been greatly overestimated; the effects of injections in human beings were in the great majority of cases neither striking nor concordant; and in those cases, too few, unfortunately, in which an effort was made to control the observations carefully, the results appeared to be even less notable. Despite their extensive employment, the indications for the clinical use of Theelin and related products are at the present time only imperfectly understood. With a view to establishing, if possible, the indications for and limitations of endocrine therapy of this type, a comprehensive review on this subject was prepared and adopted by the Council for publication. Theelin and related preparations have been used in practically all the special ills the human female "is heir to"; even the male has not escaped. The results in general have been quite disappointing, despite the abundance of case reports available, numbering by now several thousand. The place of Theelin and related products in gynecologic therapy remains for the future to decide. Great caution is necessary in the use of these preparations and greater caution in making deductions from it. The indiscriminate use

is likely to do more harm than good, not only because of the effect of the preparations themselves but also because general therapeutic measures intended to aid the organism in restoring its own equilibrium are likely to be neglected. The Council believes that the future of endocrine therapy in the sexual sphere appears quite promising; but so far enthusiasm in this case has in large part seriously interfered with clinical judgment; the clinical use has kept far ahead of the laboratory data; controlled observations have been few indeed. It is time to call attention to the fact that most of the basic facts should first be worked out in the laboratory before they are tried in the clinic. (Jour. A. M. A., April 29, 1933, p. 1331.)

The Female Sex Hormones.—Until recently, therapy employing so-called female sex hormones was limited largely to the use of desiccated ovarian products and various extracts without demonstrated value. Today the physician has available preparations of demonstrable potency in animals and of possible usefulness in human beings. Two, isolated in crystalline form, have been given the nonproprietary designations theelin and theelol. The Council on Pharmacy and Chemistry has published a comprehensive analysis of the status of female sex endocrine therapy, particularly with estrogenic preparations. In few branches of physiologic research has experimental work progressed as rapidly as in this field, but clinical observations have not kept pace. Unfortunately, many of the products were submitted to uncontrolled clinical observations; inevitably this reacted to the discredit of endocrine therapy in ovarian and related disorders. Research with estrogenic substances, as the report of the Council on Pharmacy and Chemistry brings out, has been hampered by the confusion resulting from inability to compare the potencies of preparations used in different laboratories. Recently, however, the Health Organization of the League of Nations has undertaken to establish an international standard for such products. It will, of course, take time for the work of the League's committee to reach consummation; but the action is a commendable step in the direction of greater comparative accuracy. (Jour. A. M. A., April 29, 1933, p. 1342.)

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THE JOURNAL OF THE MEDICAL ASSOCIATION OF THE STATE OF ALABAMA

Volume 2

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Miscellany

REMARKS OF SURGEON GENERAL H. S. CUM-
MING AT THE DEDICATION OF MERCK
RESEARCH LABORATORY, TUES-
DAY, APRIL 25, 1933

The dedication of a laboratory for research purposes at any time is a matter for congratulation. When this occurs during a period of serious financial stress, it becomes more significant. And when such a dedication is consummated under the auspices of a business enterprise, it should attract the attention of thinking and responsible people in many branches of activity. For a business undertaking, no matter what altruistic and humanitarian convictions and purposes it may entertain, must first of all be a business success before it can carry them out.

I think, therefore, that we may confidently interpret the present occasion as an expression by experienced and successful business men to the effect that research pays. To the scientifically minded of course this proposition offers no opportunity for discussion (except perhaps as regards his own personal prosperity), but the general public still seems to be sadly lacking in conviction. This lack, however, is chiefly due to a misunderstanding of what research really means, because, nearly all intelligent persons do constantly make use of this weapon in their daily lives. If we may compare the public to a wayfarer lost in the forest, a simile which does not appear extremely far-fetched at the present time, we might say that if the lost one confusedly blunders about in the hope of striking a path, he is certainly neglecting his research opportunities. On the other hand, if he intelligently uses the resources at hand, if he ascertains the points of the compass from the stars, notes the direction of slopes and the flow of streams, and correlates this information into a theory of his position, he is in a crude way making use of research. And yet this same individual may have a contempt for his brother who is doing the same sort of thing in a laboratory with his instruments of precision and his experimental animals. To me, therefore, there seems to be a deep significance to the public in the present occasion, having in mind the prevailing conditions.

Nearly every scientific worker must at some time have suffered the sad experience of wasted time and effort due to the shortcomings of his tools and supplies. Inaccurate instruments and impure reagents have in the past contributed much to the failures and mistakes by which the progress of science has been retarded. We must, therefore, welcome any step which holds the promise of still further additions to the creditable advances already made in the direction of furnishing dependable articles for scientific use, and the same of course applies to the preparations used by physicians in the treatment and prevention of disease. Nor must we lose sight of the fact that such advances are the result not only of research, but to a considerable degree of the stimulus of business competition.

I understand that this laboratory is to provide for both of the two general classes into which research has been somewhat arbitrarily divided; that of so-called pure research dealing with fundamental principles of the subject matter, and that of applied research which attempts the solution of immediate practical problems. I bring this up only to add my endorsement to the view that only under such an arrangement is the continued and consistent success of a research institution possible. Without fundamentals, practice becomes restricted to mere ingenious recombination, and without application fundamentals are sterile except to the idealists, who unfortunately or otherwise do not constitute a majority of our people. In our researches in the Public Health Service, we have long recognized the necessity for including both types of research.

The mention of the Public Health Service leads me to some remarks on the propriety of research on the part of government institutions. I shall confine them to the subject with which I am most familiar, that of public health. The principle seems to be simple. No one can deny that the health of the people is a matter for governmental concern, or that the government's interest should be intelligent. The corollary is that this interest cannot be intelligent unless use is made of research to determine its facts. The question remains as to whether the Government should itself undertake the re-

searches necessary for its guidance or rely upon other agencies to make them for it. An unqualified answer cannot be given. Much of the necessary information can only be secured by an agency having the scope of government, such for example as that relating to the national and world wide prevalence of disease. The collection and analysis of such material presents many research features. Again, certain diseases because they are concerned in interstate and international quarantine, have required that the government on account of its responsibilities should acquire special and first hand information about them. In another category are those emergency conditions which sometimes tax the facilities of local authorities beyond their resources and lead to the extension of government aid as provided by law.

A few examples may indicate the necessity for the entrance of the government into public health research. The spotted fever of the Rocky Mountains, presented itself many years ago as a purely local problem in the Bitter Root Valley of Montana. Fertile lands were rendered almost uninhabitable by the menace of this strange disease. The Public Health Service was called upon to assist the State authorities. To make a long story short a protective vaccine was finally devised for the use of the most exposed classes in the infected area. Incidentally this area was found to include not only vast territories in the Rocky Mountain region, but an identical disease has been shown to occur sporadically even in our Eastern states, where apparently it has smouldered unrecognized for a long time.

As another example of the proper subjects of government research, we might select the subject of stream pollution. The statement is not far wrong that the ma-

jority of our citizens must drink water contaminated by the wastes of upstream communities. The majority of the streams pass through several states. The problem therefore becomes in a sense an interstate one, and we must look to the federal government for the studies which are to give the solution of this increasingly serious health hazard.

As a final example, we might consider the question of biologics control with which our distinguished visitor has been so intimately concerned in his own country. Before such control was instituted by the government, the most chaotic conditions existed. There were no standards of purity or potency for an important and dangerous class of medicinal products, and the public was virtually at the mercy of adventurers who if they so desired were at liberty to exploit our citizenry with harmful or worthless preparations. I am happy in the belief that this control has been exercised in a manner giving maximum protection to the public without injustice or serious inconvenience to manufacturers.

I have referred briefly to popular misconceptions of scientific research. It must be confessed however that the scientist in his relative isolation is in danger of falling into a supercilious habit of thought regarding the public, and of ignoring its needs. Agencies are required to translate the findings of science into useful form, and I wish to pay my tribute to such establishments as combine the strict discipline of scientific research with the ethical production of useful products. I desire also to extend my congratulations to Messrs. Merck & Co. Inc., and particularly to my friend, President George W. Merck, upon his courage and vision in undertaking such a task at such a time.

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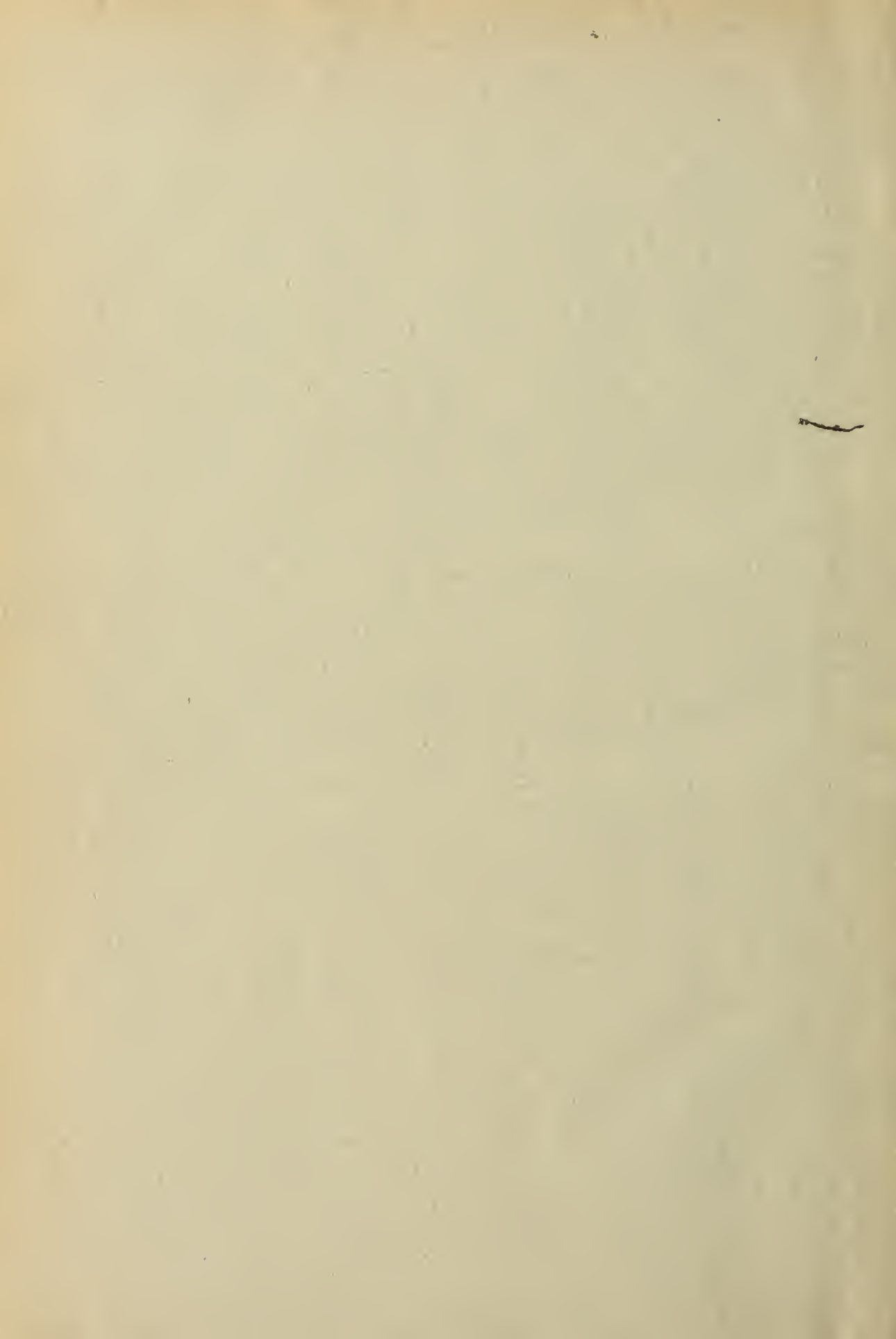
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